EXHIBIT A

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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Board of Trustees of the AFTRA Retirement Fund, Plaintiff x

x

v.

x

JPMorgan Chase Bank, N.A.: x

-- x

Consol. Civil Action No. 09-00686

And related consolidated cases

Expert Report
of
Professor Bernard S. Black
University of Texas
Law School and McCombs School of Business

Submitted on behalf of Plaintiffs

13 August 2010

I. Qualifications

I am, through August 2010, Professor of Law and Hayden W. Head Regents Chair for Faculty Excellence director of the Center for Law, Business and Economics at University of Texas Law School, and Professor of Finance at the University of Texas, McCombs School of Business. Beginning September 1, 2010, I will be Nicholas J. Chabraja Professor at Northwestern University, with positions as Professor of Law in the School of Law, Professor of Finance in the Kellogg School of Management, and Faculty Associate at the Institute for Policy Research. My curriculum vitae is attached as Appendix A to this Report. I have taught courses in, among other subjects, Corporate Acquisitions, Corporate Finance, Corporations, and Securities and Capital Markets Regulation.

I am an author or coauthor of Ronald Gilson & Bernard Black, *The Law and Finance of Corporate Acquisitions* (2d ed. 1995 and supplement 2003-2004; third edition in preparation); Bernard Black, Reinier Kraakman & Anna Tarassova, *Guide to the Russian Law on Joint Stock Companies* (1998); and many professional articles, principally in the areas of corporate governance, corporate finance, law and finance, corporate and securities law, corporate acquisitions, and health care law and policy. My professional articles are listed in my curriculum vitae. Most are available online at http://ssrn.com/author=16042.

I have been at the University of Texas since 2004, but will move to Northwestern University on September 1, 2010. From 1998-2004, I taught at Stanford Law School, where I was George E. Osborne Professor of Law. From 1988-1998, I taught at Columbia Law School, where I was Associate Professor of Law (1988-1991) and Professor of Law (1991-1998). I served as Counsel to Commissioner Joseph Grundfest of the Securities and Exchange Commission from 1987-1988 and practiced law from 1983-1987 in the mergers and acquisitions group at Skadden, Arps, Slate,

Meagher & Flom. While at Skadden Arps, I participated in a variety of corporate acquisitions and public and private offerings of securities. From 1982-1983, I was a law clerk to Judge Patricia M. Wald of the United States Court of Appeals for the District of Columbia Circuit. I received a J.D. degree from Stanford Law School in 1982.

In addition to my scholarly writing and experience as a practicing lawyer, I have been an outside director of two public companies: Kookmin Bank from 2003-2005 (largest Korean commercial bank, listed on New York Stock Exchange), where I was a member of the risk management and management strategy committees; and Homeland Holding Corp. from 1989-1996 (supermarket chain acquired through a leveraged buyout, with publicly held debt and privately held equity), where I was chair of the audit committee. I also helped to create, and directed from 2002-2004, the Directors Consortium training program for public company directors (sponsored by Stanford Law School, University of Chicago Business School, and Wharton Business School).

I am managing director and part-owner of Social Science Electronic Publishing, Inc. (SSEP), an electronic publishing company which runs the Social Science Research Network (www.ssrn.com). SSRN is the leading on-line source for "working papers" (academic papers during the period prior to formal publication) in accounting, economics, finance, law, political science, and other areas of the social sciences and humanities. It holds approximately 300,000 documents, receives about 750,000 downloads of papers per month, and is ranked number one among open source document repositories worldwide.

I consider myself to be qualified to act as an expert in the fields of corporate finance (including valuation of asset-backed securities and special-purpose securitization vehicles); corporate acquisitions, corporate governance, corporate and securities law and practice, custom and practices

related to due diligence investigation by investors into an issuer and its securities (including the need to follow up on warning signs ("red flags") as to the value and risks of the securities or the issuer's behavior), and fiduciary obligations. I have served as an expert witness in all of these areas, and have testified for both plaintiffs and defendants. I am not an expert on ERISA (the Employment Retirement Income Security Act) but have undertaken research sufficient to enable me to have reasonable confidence in the conclusions below.

I am familiar with (i) derivative securities and the risks involved in those securities, including the securities which Sigma Finance issued and invested in; (ii) the business model followed by Sigma and other SIVs, involving borrowing at short maturities and investing at longer maturities, and the risks inherent in that model; (iii) the typical investment practices of money market funds; and (iv) securities lending practices.[1]

I am being compensated for my work on this matter at my usual hourly rate of $800. A list of cases that I have testified in or prepared expert reports in is attached as Appendix B.

II. Documents Reviewed and Scope of Report

In preparing this Report, I reviewed the following documents and other information:

[1] I studied securities lending in connection with my research with Henry Hu on "empty voting": Henry T.C. Hu & Bernard Black, *Equity and Debt Decoupling and Empty Voting II Importance and Extensions*, 156 **University of Pennsylvania Law Review** 625-739 (2008) (http //ssrn com/abstract=1030721); Henry T.C. Hu & Bernard Black, *Equity, Debt, and Hybrid Decoupling Governance and Systemic Risk Implications* 14 **European Financial Management** 663-709 (2008) (nearly final version at http //ssrn com/abstract=1084075), Henry Hu & Bernard Black, *Hedge Funds, Insiders, and the Decoupling of Economic and Voting Ownership Empty Voting and Hidden (Morphable) Ownership*, 13 **Journal of Corporate Finance** 343-367 (2007) (nearly final version at http //ssrn.com/abstract=874098); Henry Hu & Bernard Black, *The New Vote Buying Empty Voting and Hidden Ownership*, 79 **Southern California Law Review** 811-908 (2006) (http //ssrn com/abstract=904004).

1. Complaints in this case filed by the Board of Trustees of the AFTRA Retirement Fund, the Board of Trustees of the Imperial County Employees' Retirement System, and the Investment Committee of the Manhattan and Bronx Surface Transit Operating Authority Pension Plan
2. Expert reports related to motion for class certification, exhibits to these reports, and opinion granting the motion for class certification.
3. Depositions of Seth Bernstein, Adam Brinton, John Donohue, John Kodweis, Sandra O'Connor, John Pietrunti, David Reddy, Matthew Sarson, Lisa Shin, Gillian Van Schaick, and James Wilson, and exhibits to these and selected other depositions.
4. Sigma Finance Corp. ("Sigma") monthly investor reports for January 2007 through August 2008; audited annual and selected unaudited quarterly financial statements issued by Sigma during 2004-2008; and selected Sigma offering statements.
5. Information on Sigma Finance and its securities, including amounts outstanding and maturity dates from Bloomberg, and credit rating reports from Fitch, Standard and Poor's, and Moody's.
6. Investment Management Contract between Gordian Knot and Sigma; Security Trust Deed between Sigma and Deutsche Trust
7. Selected news articles about Sigma.
8. Correspondence between Fitch and Sigma concerning Fitch's ratings of Sigma securities during 2007-2008.
9. April 10, 2008 email by Kevin Fiori of JP Morgan.

III. Summary of Principal Opinions

The opinions below are based on the information available to me and on my expertise and experience. I reserve the right to revise or supplement my opinions based on new information that becomes available, or to address issues raised in briefs submitted by the parties or other expert reports.

1. Many of JP Morgan's securities lending clients were pension plans regulated under the Employment Retirement Income Security Act ("ERISA"), and JP Morgan was a fiduciary for those plans and subject to the usual ERISA "prudent expert" standard of care. In my opinion, JP Morgan, acting through its Securities Lending unit ("JPM Securities Lending"), which relied on analysis provided by the Asset Management unit ("JPM Asset Management"), failed in multiple ways to meet

this standard of care. In particular, JPM Securities Lending (1) failed to establish an appropriate position limit on investments in Sigma; (2) failed to understand the risks associated with Sigma's business model; (3) failed to conduct sufficient due diligence on its investments in Sigma; (4) failed to understand how repo financing affected Sigma's viability; (5) failed to assess the likelihood that Sigma could survive long enough to repay its June 2009 medium term notes (MTNs); (6) failed to follow up on "red flags" that provided warnings of trouble ahead; (7) failed to consider a full range of exit strategies; (8) failed to disclose sufficient information about its Sigma investment to its beneficiaries; and (9) allowed critical decisions to be taken by people without sufficient knowledge or finance training to properly assess the risks of continuing to hold Sigma MTNs.

2. As Sigma's winddown progressed, JPM Securities Lending was increasingly no longer making an investment decision to hold Sigma MTNs, it was gambling on which MTNs would pay off, and doing so without knowing the odds (which for the June 2009 MTNs, were becoming increasingly poor). Conversely, there was a high likelihood that Sigma would fall off of a "repo cliff" well before the 2009 MTNs matured, with minimal recoveries for its remaining MTNs.

IV. An Overview of Securities Lending Practices

A. The Economics of Securities Lending

In a typical share "lending" transaction, the borrower obtains formal legal ownership of the shares, including the right to vote and receive dividends. The borrower promises to return the borrowed shares either at a specific time or on demand by the lender, and deposits collateral with the lender as security for this promise. The borrower often has the right to return the shares and close out the loan at any time. During the period of the loan, the borrower pays to the lender a dividend-equivalent payment. The collateral for the loan can be either cash or high quality marketable

securities, typically Treasury securities.[2] The borrower pays for the share loan at a rate specified in the share loan contract. Typically this rate is quite low, around 15-20 basis points per year.[3]

While this practice is called share "lending," the substance is akin to a secured repurchase ("repo") transaction: The "lender" sells the shares to the borrower, who takes legal title and all rights as against the company which issued the shares, subject (typically) to the lender's right to repurchase the shares at any time, and the borrower's right to require a repurchase at any time.

The amount of collateral is adjusted during the loan period, usually daily, to reflect changes in the value of the loaned shares. In particular, if share value rises, the borrower must post additional collateral. If share value falls, the lender must return some of the collateral to the borrower. The amount of collateral is typically set as a percentage ("Margin Percentage") of the value of the shares. This percentage often exceeds 100%; a common cash collateral margin is 102%. Overcollateralization protects the lender against the risk that the borrower will default at a time when the collateral value is less than the value of the underlying shares.

If the collateral is marketable securities, the lender will typically pass through to the borrower any return on the securities, much as the borrower passes through to the lender any return on the borrowed shares. If the collateral is cash, the lender is normally expected to invest the collateral in high-quality, highly liquid Treasury securities or other money market instruments. Liquidity is essential for several reasons: the borrower typically has the right to unwind the transaction at any time; the lender does not want to impair its own ability to sell the loaned securities; and the lender

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[2] For details on the typical nature of share lending contracts, see Bond Market Association, Master Securities Lending Agreement (2000). On the use of Treasury securities as non-cash collateral, see James Wilson Dep. at 31.

[3] For more information on typical market terms, see Gene, D'Avolio, The Market for Borrowing Stock, 66 *Journal of Financial Economics* 271-306 (2002); Darrell Duffie, Nicolae Garleanu, and Lasse H. Pedersen, Securities lending, shorting, and pricing, 66 *Journal of Financial Economics* 307–339 (2002).

may need to return some collateral to the borrower due to share price changes. The lender pays a fee to the borrower ("Cash Collateral Fee") on the amount of cash collateral at a rate specified in the contract. Typically this rate is set relative to a short-term Treasury rate; this ensures that the lender can invest the collateral at a rate sufficient to cover the fee.[4]

If the collateral is cash, the lender can potentially earn a modestly higher rate of return than the Cash Collateral Fee by investing in money market instruments other than Treasury Securities. Some lenders choose to do so. Typically, however, the primary concerns in investing cash collateral are liquidity and safety of principal.

In big picture, securities lenders typically seek to earn a bit of extra return on their share positions by lending shares, without meaningful additional risk, at the cost of forgoing voting and other rights which attach to shares, less favorable tax treatment of dividend-equivalent payments than of the underlying dividends (this is not a concern for tax-exempt lenders).

B. Risks Involved in Securities Lending

Securities lending is normally a business with extremely low risk, and also low margins.[5] The lender might, for example, make available for loan a pool of $1 billion in marketable securities. On average over the course of a year, perhaps 20% will be on loan at any given time. The lender's return is thus the lending rate of 15-20 basis points * (20% of shares on loan) = 3-4 basis points. The principal risk to the lender is normally the risk of borrower default accompanied by

[4] Often, the loan rate and the cash collateral fee rate are combined: The lender pays a single "rebate" rate to the borrower, which reflects expected investment return on the cash collateral minus the loan rate. See, for example, James Wilson Dep. at 31-33 (offering an example with non-cash collateral and a loan fee, and an example with cash collateral and a combined rebate rate).

[5] O'Connor Dep. at 163-164.

undercollateralization. This risk is addressed through care in choosing counterparties, and through the choice of Margin Percentage.

Lenders who receive cash collateral could theoretically decide to take additional risk when investing cash collateral in order to earn extra return but this is not usual. I know of no evidence that the plaintiffs in this case sought extra return at the cost of extra risk; that JP Morgan invested with this goal; or, if JP Morgan did so, that it advised lenders of this goal. The evidence is instead that JP Morgan marketed securities lending as a service to institutions who already used its share custodial services, as employing a conservative investment strategy that would maintain liquidity, preserve capital. give investors a small amount of extra return, but *not* expose them to an significant risk to principal.[6]

This overview is consistent with JP Morgan's and its clients' practice for the managed accounts involved in this case. These include three pooled investment accounts, JPMorgan Chase Bank, N.A. Cash Collateral Fund ("CashCo"), Delaware Statutory Trust I ("DSTI") and JPMorgan Chase Bank, N.A. Conservative Collateral Investment Fund ("ConCas"), and a number of individual managed accounts. All accounts used similar conservative guidelines, had similar investment goals, and made similar investments.[7] For convenience, I will focus here on the CashCo guidelines.

CashCo was managed as a stable net asset value (NAV) fund, closely similar to a money market fund.[8] The principal difference was that its guidelines allowed it to invest in maturities somewhat longer than a money market fund regulated under § 2(a)(7) of the Investment Company Act ("2a7 fund") – up to two years, versus the 13-month regulatory limit for 2a7 funds. As JP

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[6] O'Connor Dep. at 23-24, 164; Sarson Dep. at 172-73.

[7] Reddy Dep. at 23-28, 35.

Morgan's portfolio managers testified, their investment decisions were "driven by . . . safety and soundness,"[9] and the investments were intended to be "very very conservative."[10] CashCo invested in the same issuer "names" as JP Morgan's 2a7 funds; the only difference was maturity.[11]

C. Prudence for Securities Lending

The prudence of JP Morgan's investment of cash collateral must be assessed taking into account the investment goal of the JP Morgan securities lending unit ("JPM Securities Lending"), as presented to investors, and the business need to maintain liquidity.

1. Investment risk

With regard to JP Morgan's investment goal for its cash collateral accounts, each investor's overall risk appetite is not relevant. Instead, in accordance with finance theory, an investor who made the customary choice to invest cash collateral conservatively would choose a risk profile for its overall portfolio. In deciding how much to invest in equities, the investors would take into account that its equity portfolio had equity risk, not equity risk *plus* extra risk incurred through securities lending.

Holding equities, and then taking additional risk through lending them out and investing cash collateral in risky assets, is economically similar to holding a leveraged equity portfolio, or a portfolio with higher overall "betas" for various sources of market risk. An investor could decide to boost its risk in any of these ways, or it could decide not to do so. The investment manager's job,

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[8] Reddy Dep. at 24-29; James Wilson Dep. at 61.

[9] James Wilson Dep. at 41.

[10] Reddy Dep. at 29-30.

[11] Reddy Dep. at 24, 29.

when investing a part of a larger portfolio, is to remain true to its own investing style, as presented to investors.

2. Need for liquidity

Liquidity is a separate concern from the risk of loss for investments held to maturity. Securities lenders have strong reason to avoid illiquid investments of cash collateral. Consider CashCo as a concrete example. JP Morgan needed to invest in assets with sufficient liquidity to allow it to sell, over a reasonable period, a large fraction of the CashCo portfolio. For example, it was entirely conceivable that: (i) share prices could drop by as much as 50%, thus requiring lenders to return a equal percentage of the collateral posted against those shares; and (ii) the drop in share prices could be accompanied by a significant drop in market appetite for share borrowing. Moreover, a sharp decline in share prices would likely reflect a broader financial market downturn, in which liquidity for fixed income investments would decline, perhaps dramatically. Market downturns often involve reduced liquidity as well. Lenders also could withdraw from the JP Morgan lending program at any time and take their lending business elsewhere, or simply cease lending. This too could lead to a demand for liquidity.

Putting these two factors together, I would be uncomfortable, from a prudence perspective, unless CashCo had the ability to liquidate, say, 75% of its portfolio over a several month period, at reasonable prices, during a liquidity crisis. Levees on the banks of rivers are often built to withstand a "100-year flood" – a flood that is expected to occur only once in a hundred years. Tall buildings are built to withstand a 100-year wind. Buildings and roads in an earthquake zone are built to withstand a earthquake above the upper end of what is expected, to provide a safety margin in case

expectations turn our wrong. Similarly, in my opinion, prudence for a conservative, "good as cash" investment style means preserving capital in both normal and extraordinary times as well.

3. Position Limits

Given the combination of need for safety and need for liquidity, I would expect the investment guidelines for investing cash collateral to include position limits for each issuer and each security. These limits needed to be low enough so that, if an issuer suffered an adverse shock which makes it advisable to sell some or all holdings, it would be feasible to do so at reasonable prices, even in a liquidity crisis.

In the particular case of JP Morgan, its money management and securities lending units shared common investment goals and common analysts, so might need to sell at the same time. The position limits should have reflected JP Morgan's overall position, for its securities lending and money market units combined.

As a practical matter, adverse shocks are likely to occur when markets are stressed and liquidity is limited. The position limits should take this into account. An analogy: Building codes require large buildings to have sufficient fire exits and stairs to permit rapid evacuation in an emergency. Building managers conduct fire drills, to confirm ability to evacuate. A similar assessment is prudent when investing in an issuer for whom a liquidity shock is a major business risk.

V. Fiduciary Standard: The Prudent Expert Standard

JP Morgan acted as a fiduciary with respect to its securities lending clients, and understood that it was so acting[12]. Like any fiduciary, it was required to act both prudently and in the interests of

[12] J. Wilson Dep. at 40-42; O'Connor Dep. at 19.

its clients, rather than its own interests, if those interests came into conflict. Moreover, it was obligated to avoid conflicts when feasible.

Many JPM Securities Lending clients were ERISA pension plans . Thus, JP Morgan was acting as an ERISA fiduciary, and faced a statutory standard of prudence. ERISA fiduciaries are required to act "with the care, skill, prudence, and diligence . . . that a prudent man acting *in a like capacity and familiar with such matters* would use" and face liability for failing to so act.[13] Since care and skill are assessed in terms relative to those of someone "acting in a like capacity and familiar with such matters," rather than the care and skill of an average person, this standard is known as a "prudent expert" standard.

My statements in this report about prudence or its lack are measured relative to this standard. I would expect JP Morgan, which was investing billions of dollars in Sigma alone at any given time, and hundreds of billions overall, through its combined Asset Management and Securities Lending units, to understand the risks posed by its Sigma investment, including the risks discussed below.

Fiduciaries should also avoid conflicts of interest, and have procedure in place to enable them to do so. I do not discuss JP Morgan's conflicts here, save to observe that they exist, because I understand that another expert is doing so.

VI. Sigma's Business Model and Business Risks

I discuss here the central elements of Sigma's business model, and the risks it posed to investors.

[13] ERISA § 404(a)(1)(B), 29 U.S.C. § 1104(a)(1)(B) (2006).

A. Carry Trade

Sigma's business model combined two main features. First, like many other structured investment vehicles ("SIVs"), Sigma was betting on yield curve arbitrage, sometimes known as the "carry trade." It invested in medium term assets, with a weighted average life of 3-3.5 years.[14] It financed these purchases by issuing shorter-maturity debt, with a weighted average maturity of around one year.[15] Given a typical, upward sloping yield curve, Sigma would earn more on its assets than it paid on its debt.

There are few free lunches in finance, however, and the carry trade is not one of them. Instead, it carried sizeable risks. One major risk was that the yield curve would change. An inverted yield curve would expose Sigma to losses as it rolled over short-term debt at higher rates to refinance longer-term assets.

The second risk was a liquidity shock. If the market for Sigma's short maturity paper dried up, it would be in immediate trouble. This is, of course, what happened. I will say more below about how Sigma's death struggles affected the value of its MTNs, including those held by JPM Securities Lending.[16] But I focus here on the implications of illiquidity. Sigma inability to issue new senior debt would almost surely be accompanied by reduced liquidity for its outstanding senior debt. Investors would worry about outstanding Sigma notes as much as about potential new notes.[17]

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[14] See, for example, Sigma Finance Monthly Report (Jan. 2007).

[15] See, for example, Sigma Finance Monthly Report (Jan. 2007). Sigma reported its outstanding debt maturities in buckets based on maturity at time of issuance; I used the reported data to estimate the weighted average life at time of issuance at around 1.2-1.3 years. Average maturity at any point in time would be less than this.

[16] I rely here on personal knowledge as an expert witness for plaintiffs in the NCFE litigation (after JP Morgan settled out of the case).

[17] References in this report to Sigma "notes" or "senior notes" are to Sigma medium term notes (sometimes called MTNs), unless otherwise specified. Sigma also issued capital notes, which were subordinate to the Sigma notes, generally with longer maturities.

Thus, one major risk to Sigma's business model was a liquidity shock *to Sigma*. This strengthened the need for a prudent investor, seeking safety of principal, and therefore potentially needing to sell in case of trouble, to have an exit even when liquidity was limited – because that was most likely when an exit would be needed. Prudent position limits would reflect that need.

The carry trade, in effect, carries large "tail" risk. It is modestly profitable in good times, but disastrous in bad times. It has been likened to "picking up nickels in front of a bulldozer."[18] Mildly profitable until you get squashed. In 2007, the bulldozer started rolling. Sigma and other SIVs pursuing similar strategies got squashed.

The borrow short, invest long strategy can make sense for a commercial bank, which relies on this strategy as a small part of an overall portfolio of investments, and has backup sources of liquidity, including insured deposits and borrowing from the Central Bank. Like most finance scholars, I am skeptical that it makes economic sense as a stand-alone business, shorn of the regulatory subsidy that commercial banks effectively enjoy.

Many other SIVs were protected against liquidity risk, because they were bank-sponsored, and the bank was a liquidity provider of last resort.[19] More generally, companies that issue commercial paper understand that they can lose access to this market at any time, and routinely arrange for backup bank lines of credit, to replace their commercial paper in case of need. Sigma, in contrast, had no backup source of liquidity.[20] It chose, in effect, not to buy insurance against

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[18] See Roger Lowenstein, (2000). *When Genius Failed: The Rise and Fall of Long-Term Capital Management*. (2000), at 102 (applying this aphorism to the arbitrage trades employed by Long-Term Capital Management, of which the carry trade was one).

[19] Bank sponsored SIVs can be understood as a form of regulatory arbitrage. The carry trade is conducted through a SIV, which is taken off the bank's balance sheet, with the bank as liquidity provider of last resort.

[20] Sigma had some contractual liquidity providers, but in very limited amounts, sufficient only to cover short term liquidity needs.

bulldozer risk. This meant more profit for Sigma's principals at Gordian Knot in good times, but higher risk for investors in bad times.

B. Buy Moderately Risky, Issue Supposedly "Safe"

The second major element of Sigma's business strategy was also employed by many other SIVs. Sigma bought moderately risky assets, and used these assets to support AAA rated debt. First, about 30% of Sigma's assets were rated A or BBB, the lowest investment grade categories; a small bit was not rated at all. Second, much of the higher ratings were assigned to structured finance assets, including residential and commercial mortgage-backed securities, collateralized loan obligations and collateralized bond obligations, and other asset-backed securities. Overall, structured finance assets comprised another 35% of the portfolio. How risky were these? No one really knew. But risk certainly rose once the market for mortgage-backed securities and other complex derivative securities collapsed in August 2007, in what has been called the "Panic of 2007."[21]

VII. Sigma's Wind-down: Repo and the Cliff

The markets for Sigma to issue new commercial paper, MTNs, and capital notes closed in August 2007. Sigma immediately faced the need to pay more on its liabilities than it would receive on its assets, as each matured. It could have chosen to enter winddown mode, in which it would suspend paying management fees and paying principal or interest on capital notes. It would then sell assets if it thought this the best course, but would otherwise use cash from maturing assets to pay its commercial paper and MTNs, as the assets matured. This would likely have resulted in Sigma deferring payments on some of its senior debt, capital noteholders suffering some losses, and

[21] See Gary Gorton, The Panic of 2007 (working paper 2008), at http://ssrn.com/abstract=1255362.

possibly losses to senior noteholders, but not catastrophic ones. If Sigma held good assets, those assets would pay off in due course.

A. Sigma Gambles on a Market Recovery

Sigma instead chose a far riskier course. It did not enter winddown. It continued to pay maturing senior notes, maturing capital notes (thus eroding the base of quasi-equity underneath its senior notes), and management fees to Gordian Knot. To obtain the funds to pay maturing senior notes and capital notes, Sigma pledged many of its best assets as security in "repo" transactions. In these transactions, the "lender" provided funds, nominally by buying assets from the borrower. The borrower was expected to repurchase the assets at a later date. The substance was akin to a secured loan, except that the lender held legal title to the assets. These loans were overcollateralized. With a 10% haircut, the repo provider would lend \$90 against assets of \$100.

Sigma also engaged in "ratio trades" with investors, in which investors traded senior notes back to Sigma in return for Sigma's assets. It sold some assets into the market. The sales provided cash to pay maturing notes; the ratio trades reduced the amount of outstanding notes. Both, however, were in amounts far below Sigma's needs. Repo filled the remaining gap between slowly maturing assets and rapidly maturing liabilities.

If the markets turned in time and liquidity for Sigma's assets returned, this strategy could have let Sigma sell its assets and pay its senior debt in full. If the markets did not turn, it had features akin to a reverse Ponzi scheme, in which holders of earlier maturing notes were paid in full at the expense of leaving little or nothing for later maturing debt.

This reverse Ponzi scheme can be illustrated with an example. I will put aside asset sales, asset maturities, and ratio trades, to highlight the core features of the repo route. Assume Sigma had

$105 in face value of assets and $100 in senior debt, maturing in 10 equal installments of $10 each. Assume also that due to a drop in market value, its assets had a current market value of 90% of face value, or $94.50. Thus, assets/debt = 105% with assets at face value, but only 94.5% at market value. If Sigma went into winddown, it might recover, say, 95% of face (all amounts in present value). This was likely the value maximizing choice for its creditors, and the one a nonconflicted observer would have chosen. It was explicitly contemplated, but not required, by Sigma's debt contracts. For Gordian Knot, however, this would mean a complete loss of their investment and immediate cessation of their management fees. If Sigma sold right away, into a distressed market, it would recover 90% of face (maybe less) and pay this to creditors. Once again, Gordian Knot would lose its investment and stream of management fees.

The repo alternative worked like this. To pay the first $10 in maturing debt, Sigma would pledge assets to a repo financier. This was permitted, as long as Sigma obtained financing equal to at least 90% of the market value of assets.[22] The repo financier would charge a fee, and might value the assets at less than Sigma did, say at 85% of face (call this "repo collateral value").[23] The actual fees were complex and not easy to disentangle from interest payments, but a reasonable approximation is an annual fee of around 1%, largely paid up front. The repo lender would therefore take possession of assets with $11.11 in repo collateral value, and lend $10.10 to Sigma, of which Sigma would pay $0.10 to the repo lender as its 1% fee. The market value of the pledged assets would be $11.75; their

[22] In fact, Sigma was sometimes able to obtain haircuts in the 7-8% range, at least for its repo agreements with JP Morgan, but these rose to 9-10% when the ratio of pledged/total assets exceeded 70%. The JP Morgan repurchase contracts with Sigma are available as Glasgow Dep. Exhibits 2-3, 5-6, 9-10. For simplicity, I assume a 10% haircut. JPM Securities Lending had no reason to assume a lower haircut than this.

[23] Sigma's repo agreements with JP Morgan gave JP Morgan discretion in valuing the collateral, and provided that the valuation would be (i) based on bid prices, and (ii) assuming a sale of the entire pledged portfolio, which might further depress prices.

face value would be $13.06: So, if Sigma initially had assets with face value of $105 and market value of $94.50, then after the repo transaction, it would have unpledged assets with face value of $91.84 and market value of $82.66. After the first repo transaction, it ratio of unpledged assets/debt had dropped from 105% to 102% based on face value, and from 94.5% to 91.8% based on estimated market value.

Now repeat 6 more times. By the end, Sigma has left only $13.58 in unpledged assets, to cover its remaining $30 in debt. The repo lenders then say, enough already, declare a default, seize the collateral, and sell it.[24] In theory, if they sell the collateral for more than the $70 that Sigma owes them, then should pay the excess to Sigma. In practice, they have no incentive to collect any more than the $70 they need to cover their loan, and likely will return little or nothing to Sigma. To make matters worse, the repo lenders will have cherry picked Sigma's better, more liquid assets. The limited remaining assets will be worth less than their face value of $8.58, perhaps substantially less.[25]

By relying so heavily on repo, Sigma was heading toward a cliff. If market values and liquidity recovered before it ran out of assets to pledge to repo lenders, it might recover. If not, the value of its remaining senior notes would crash when the repo lenders pulled the plug. As Sigma continued through 2007 and 2008, building up more and more repo, while the market values of its assets fell, it should have been increasingly clear that the likely ending was bad.

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[24] This is an oversimplification, but not much of one. Under Sigma's actual repo agreement with JP Morgan, once the ratio of pledged to total assets exceeded 70%, JP Morgan could demand (almost) immediate partial repayment cash, in an amount Sigma was unlikely to be able to raise on short notice.

[25] This is what happened, after Sigma failed. Its remaining unpledged assets had face value of $2 billion, but were sold at auction in December 2008 for only $306 million. See Neil Unmack, *Sigma Finance Investors May Not Be Paid 'In Full or In Part,'* Bloomberg, *available at* http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a5NPA7veq7Es (accessed August 12, 2010).

B. Sigma's Wind-down: Asset-Liability Mismatch

The pledging of assets to repo lenders was only part of why Sigma was approaching a cliff, after which senior note values would crash. As its assets matured and were repaid, one might expect the average remaining maturity to decline. Instead, average asset life was *increasing*. How was this possible? The obvious explanation involved asset sales and ratio trades. Sigma used both, in part, on asset sales to meet maturing liabilities. The increasing average maturity of remaining assets was a strong clue that Sigma was often selling or trading its short-dated assets, leaving on its books the harder-to-sell long-dated assets. Those assets also likely could be sold, if at all, at a higher discount to face value.

As Sigma ran out of short dated assets, it had less and less ability to pay maturing liabilities through asset maturities or asset sales, and perhaps also through ratio trades. That made repo the principal remaining way to meet maturing liabilities, which increased the pace at which it was approaching the repo cliff.

C. Where Was the Repo Cliff?

An important twist on this story was that only Sigma and its repo lenders knew how close the cliff was. Sigma disclosed the amount it had *borrowed* through repo transactions, but refused to tell its non-repo creditors, including JP Morgan Asset Management and Securities Lending, the amount of assets it had pledged to repo lenders, and thus how many unpledged assets remained. The repo haircuts were not supposed to exceed 10% of market value, but Sigma wasn't disclosing what market values the repo lenders were assigning.

VII. JP Morgan's Actions as an Investment Fiduciary

I assess next how JP Morgan's conduct looks, measured against the standard of a prudent expert, charged with managing a large portfolio that was intended to be highly conservative, highly safe, and highly liquid, as JPM Securities Lending's cash collateral portfolio needed to be.

A. Position Limits

I would expect a prudent expert to understand the need for position limits, and to establish limits for each issuer and each security, that would permit exit, at reasonable prices, even in a liquidity crisis, if it became appropriate to exit from a particular investment or issuer. If both JPM Asset Management and Securities Lending were investing in the same issuer, the position limits should allow exit by both.

JP Morgan had position limits, but I am aware of no evidence that the limits were developed with exit in mind. The position limit on Sigma set by JP Morgan Asset Management as of January 2007 was a whopping $7 billion, or almost 15% of Sigma's total outstanding debt.[26] This was a combined limit for Asset Management and Securities Lending; of this, 35% ($2.45 billion) was allocated to Securities Lending.[27]

The portfolio managers in JPM Securities Lending, as best I can tell, paid no attention to ability to sell when deciding whether and in what quantities to purchase Sigma. Their job, as they saw it, was to buy and hold. The head of JPM Securities Lending, James Wilson, could not recall selling a single security during the 15 years he spent in this position.[28] Securities Lending did not

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[26] Lisa Shin, JPM Asset Management, Analyst report on Sigma Finance Corporation (Jan. 2007).

[27] Donohue Dep. at 45.

[28] James Wilson Dep. at 48. David Reddy confirmed that JPM Securities Lending "would not sell . . . at a loss." Reddy Dep. at 66-67.

question the huge position limits set by Asset Management; instead they bought as much Sigma as they could, within the 2-year maturity limit specified in the investment guidelines.[29]

When the markets closed for SIV refinancing in August, 2007, JP Morgan held $6.3 billion in Sigma notes between Asset Management and Securities Lending, with $2.36 billion at Securities Lending – almost at the $2.45 billion position limit. I understand that one defense that JP Morgan may raise in this case is that it was infeasible to sell Sigma notes at reasonable prices, in the quantity in which JP Morgan held them. To the extent this is true, it illustrates the imprudence of the decision to purchase Sigma debt in such large quantities.

B. Nontransparency and Limited Operating History

At least three additional factors should have counseled for lower position limits for Sigma, and perhaps not investing at all. First, Sigma's core business involved modest profits in good times and a large tail risk in bad times. How likely was the tail? No one could say with any confidence, because Sigma's operating history was far too short. Most other SIVs had backup liquidity sources to protect against this risk; Sigma did not.

Second, Sigma provided only limited information on its assets and liabilities. One could obtain, from their monthly reports, a rough sense of the categories they invested in, but no detail on specific investments. One could obtain a rough sense, but only that, of the maturity of either their assets or their senior notes.

Third, Sigma was located outside the U.S., and the exact rules it operated under were not clear. What if Sigma turned out to be a fraud? There was precedent for a structured finance vehicle

[29] Reddy Dep. at 57. Investments, whether in Sigma or any other issuer, also needed to fit within maturity schedule guidelines that ensured that, in normal times, maturing assets would cover expected cash needs.

to be fraudulent, including the $3 billion collapse of National Century Financial Enterprises in 2002. JP Morgan knew about that one, because it had settled charges that, as an indenture trustee, it ignored red flags that would have let it shut down NCFE earlier. NCFE was an onshore issuer with financial statements audited by a major accounting firm and monthly statements approved by its indenture trustees. Sigma was offshore, and its financial statements provided investors with significantly less detail than US GAAP financial statements. Risk of fraud might be low, but it was not zero.

For all of these reasons, I believe JP Morgan acted imprudently in setting position limits for Sigma which were far too large, created the potential both for a large loss if Sigma failed, and limited its ability to exit if an exit became advisable. JP Morgan thereby exposed its clients to excessive risk from a single, nontransparent issuer that faced known exposure to a liquidity shock.

C. Understanding Sigma's Business Risks

I would expect a prudent expert, before investing $6 billion in Sigma MTNs, to understand Sigma's business, and the accompanying risks. In my judgment, it was incumbent on JP Morgan to understand the "bulldozer risk" that Sigma faced, and the related risk to JP Morgan's investment in Sigma notes. I have seen nothing to suggest that Lisa Shin, JP Morgan's credit analyst for Sigma, assessed or understood these risks. In my opinion, no one who understood the bulldozer risk would have established a $7 billion position limit on Sigma.

JP Morgan was not able to directly evaluate the quality of Sigma's assets. Sigma disclosed few details on its holdings, other than ratings, asset class, and maturity buckets. As best I can tell, JP Morgan "bought the rating," without questioning the basis for that rating. At most, it bought the

rating plus a limited history of timely repayment – limited because Sigma had been in existence only since 1994.

Perhaps, it can be prudent to buy a security based on a rating without much more. JP Morgan was not alone in doing so, though that may only mean it had company in imprudence. But a prudent expert cannot do so blindly. Instead the expert must, at a minimum, understand the rating agency model, its core assumptions, and the information the model is based on. For example, Sigma's business model was prone to liquidity risk. Was that incorporated into the rating agency models? Or did they examine only default risk on Sigma's assets? One suspects the latter, because it would be hard to understand a AAA rating otherwise.

I am aware of no evidence that Ms. Shin obtained or evaluated the risk models which the credit rating agencies relied on. In particular, I am aware of no evidence that she assessed whether the rating assumed continued liquidity, and thus assumed away the bulldozer risk, even though this risk was inherent in the carry trade.

D. Due Diligence

An important part of the prudent expert standard is conducting a "due diligence" investigation into what you are buying. For debt investing, this includes an initial investigation into the borrower, including understanding its business model and the risks of that model. Thus, JP Morgan, as part of prudent investing, was required to conduct a "due diligence" investigation into Sigma and the Sigma notes, sufficient to allow it to assess any significant default risks. JP Morgan assigned this task principally to Lisa Shin, the credit analyst who followed Sigma. JPM Securities Lending relied, effectively blindly, on her approval of Sigma for purchase.

As the world changes, due diligence must continue. If risk rises, the level of diligence should rise with it. A prudent expert will also evaluate whether to hold or sell an investment, given market prices at the time. The more complex the security, the greater the accompanying need for diligence. Sigma's offshore status would call for heightened diligence, since legal recourse might be limited if something went awry. JPM Securities Lending again relied on Lisa Shin, effectively blindly, for ongoing diligence.

One can question whether complete reliance satisfies the requirements for prudent investing. Any one person can make mistakes and misjudge risks. Yet no one at JPM Securities Lending viewed it as their job to do anything other than hold Sigma unless and until Lisa Shin said to sell.

Perhaps, complete reliance on one person for an investment of this size could be prudent, if that person is a true expert. Lisa Shin, however, apparently lacked the training needed to assess investments as complex as Sigma and other SIVs. Her academic background was a bachelor's degree in industrial labor relations from Cornell, with no emphasis on finance that I know of, and no post-undergraduate training.[30] Nothing in her background suggests she had the training that would help her understand Sigma's business model and its risks. Nothing in her actions suggests she understood that model and its risks. Yet JPM Securities Lending largely relied blindly on her advice. And when she was finally persuaded of the need to sell, James Wilson of Securities Lending "talked her off the ledge" and "did not make it easy" when she planned to recommend that Securities Lending sell its 2009 Sigma MTNs,[31] yet had no basis for doing so because he understood even less about Sigma's model and its risks than Ms. Shin did.

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[30] Shin Dep. at 5-10.

[31] J. Wilson Dep. Exh. 41; Instant message interchange between John Donohue and Lisa Shin (Oct 1, 2008), Shin exh. 75; see also Instant message exchange between Lisa Shin and John Donohue (Oct. 2, 2008), Shin exh. 77

E. Attention to Red Flags

As part of its due diligence, JP Morgan should have been attentive to "red flags" suggesting risks from continuing to hold Sigma MTNs. If it found red flags, I would expect it to investigate these with care, satisfy itself that it understood the area of concern, and any related default risks. The more and larger the red flags, the greater the need for additional due diligence. Due diligence includes the need for investors to maintain an attitude of professional skepticism. Puffing, together with hiding or minimization of risk, is not uncommon. Outright fraud sometimes occurs as well.

JP Morgan was aware of at least two important red flags, yet paid insufficient attention to either. The first arose in January 2008, when Sigma decided Fitch was asking too many questions, ceased answering them, and dropped its Fitch rating. In my opinion, a rating agency's withdrawal of ratings is a major red flag, that should call for further investigation. Doubly so given the history of the withdrawal – Fitch put Sigma on negative ratings watch on Jan. 18, 2008; Sigma decided no rating was better than a downgrade and refused to provide Fitch with the information needed to assess an appropriate rating.[32] Lisa Shin knew of Fitch's ratings withdrawal, but was untroubled. She did not investigate to understand what questions Fitch had asked, that Sigma preferred not to answer.

Had Ms. Shin inquired, she could likely have learned that Gordian Knot, the management company for Sigma, was not being forthcoming in its replies to Fitch. She could likely have learned

(Donohue comments that it is "to late now" to sell Sigma; Shin comments that "I hate sec lending"; Donohue replies "they should have listened to us"; Shin comments "I'm so mad at myself for listening to jim" [Wilson]; Donohue replies "you should be!" and "We had this right!").

[32] Firth Ratings Withdrawal on Sigma Finance (Jan. 28, 2008).

that the event which precipitated Fitch's rating withdrawal was Fitch asking for details on the amount and type of assets that Sigma had pledged to its repo lenders.

The history is clear: Fitch became troubled in late 2007 by the implications of repo for the assets securing the Sigma notes, and asked a series of questions in mid-December.[33] Sigma gave obfuscatory answers to Fitch's inquiry.[34] Fitch was understandably not satisfied by Sigma's response, and requested more information, including repo pledge amounts, on January 4, 2008.[35] Sigma's manager, Gordian Knot, replied on January 8 by demanding that Fitch withdraw its rating.[36]

The ratings withdrawal was a major red flag, whatever Sigma's explanation might be. Yet Lisa Shin accepted at face value Sigma's explanation that they decided to maintain only two ratings instead of three.[37] I consider it imprudent for JP Morgan not to seek to understand what information Fitch sought from Sigma, but could not get. One can't be sure how much information Fitch would have provided, but for a major client like JP Morgan, they might well have been willing to say "we asked for details on repo pledge amounts and they told us to take a hike instead."

At least by May 2008, Lisa Shin asked Sigma directly for information on the amount of assets it had pledged to repo lenders, and they refused to provide this information.[38] This was a huge red flag. Sigma had something to hide, which could only be that it had pledged more assets than investors would otherwise have estimated. Knowing how much more was critical to knowing how

[33] Letter from DerivativeFitch to Sigma (Dec. 19, 2007).

[34] Letter from Gordian Knot to DerivativeFitch (Dec. 21, 2007), which is a model of obfuscation and, in places, outright misstatement.

[35] Letter from Derivative Fitch to Sigma (Jan. 4, 2008).

[36] Letter from Gordian Knot to DerivativeFitch (Jan. 8, 2008).

[37] Shin Dep. at 134-135.

[38] Instant message exchange between John Donohue and Lisa Shin (May 6, 2008), Donohue exh. 12 (Shin comments that Sigma "Still won't give repo info").

close it was to the repo cliff. I would expect the rating agencies to respond to a reasonable inquiry from a major client. JP Morgan was unhappy that Sigma would not provide this and other requested information, but apparently did not realize that this information was critical to any effort to assess the likelihood that particular Sigma notes would pay off, or expected recoveries after default. In my opinion, JP Morgan should have aggressively pursued all sources of information on the level of encumbered-by-repo and unencumbered assets, including the rating agencies.

If the rating agencies did not have this critical information, then they too did not know how close Sigma was to the repo cliff. The information available to me suggests that Moody's and S&P had only partial information. If they had this information, it is unclear why Sigma refused to provide it to Fitch. Moreover, the early 2008 ratings reports from S&P and Moody's do not provide these details. I cannot tell for sure whether Moody's or S&P had this information, and if so, when, because JP Morgan didn't ask. In my opinion, it was imprudent for JP Morgan not to ask.[39]

VIII. Where was the Repo Cliff?

A. Estimating the Cliff's Location

As repo levels continued to rise during 2008, JP Morgan was no longer investing, but gambling. It was gambling that Sigma would find a way to pay off the notes held by JP Morgan before falling off of the cliff, without knowing where the cliff was. In effect, it was gambling without knowing the odds.

Perhaps, through August 2008, this was not a terrible gamble. On the Asset Management side, portfolio manager John Donohue held his August 2008 MTNs, and held his breath hoping they

[39] There is partial data available in a Moody's downgrade report on Sigma from July 14, 2008, which indicates the fraction of pledged assets for some asset types but is silent on others. This information is not sufficient for me to

would pay off.[40] As it happens, he guessed right for this maturity. JPM Asset Management sold the Sigma capital notes it held and recommended that Asset Management clients sell their 2010 Sigma MTNs.[41]

Now consider the situation facing JPM Securities Lending in the summer of 2008. It held \$500M in June 2009 MTNs. At the end of August 2008, Sigma had \$27.5 billion in claimed market value of assets. The available market prices were surely lower, perhaps much lower if Sigma needed to sell quickly. Suppose that repo lenders valued the assets at \$25 billon. They wouldn't lend against 100% of Sigma's assets, because they would want Sigma to have some unpledged assets to meet margin calls and future maturities, and because they would not want to lend against some assets at all. A generous estimate might be that the repo lenders would lend against 90% of Sigma's assets, or \$22.5B. The practical cap on repo lending would be 90% of this, or about \$20 billion.

Repo was already at \$17.1 billion. So a generous estimate of remaining repo borrowing capacity was around \$3 billion. How long could Sigma survive? Table 1 shows what I could find on Bloomberg about Sigma's maturities, for the period from September 2008 through June 2009. The "outstanding" column reflects any ratio trades Sigma conducted through September 2008, so may understate the maturities it had to meet, looking forward from the summer of 2008.[42]

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assess the total amount of pledged assets, nor whether Moody's had this information. There is no similar detail in S&P's reports.

[40] Donohue Dep. at 217 (Donohue "inclined to hold out and take the risk" on the August 2008 MTNs).

[41] Donohue Dep. at 113-43, 265-67.

[42] The September 2008 notes were paid, and I do not know amounts outstanding at that time, so have assumed that 80% were outstanding (this is the rough ratio of outstanding to issued form Oct 2008 through June 2009 maturities).

Table 1. Sigma Maturities, Sept 2008 through June 2009

Sigma Finance notes maturing from Sept. 2008 - June 2009, and outstanding at Aug. 31, 2008, from current Bloomberg (Aug. 2010). Outstanding amounts could have been slightly higher at Aug. 31, 2008; amount for Sept. 2008 is estimated at 80% of issued amount. Foreign currencies are converted to US dollars based on Sept. 1, 2008 exchange rates.

Month of Maturity	Issued	Outstanding
June 2009	575,000,000	575,000,000
May 2009	203,110,000	200,000,000
April 2009	49,249,800	37,448,400
March 2009	1,216,550,000	1,121,487,000
February 2009	1,221,256,655	479,080,313
January 2009	586,035,000	495,035,000
December 2008	799,252,000	673,154,000
November 2008	946,408,992	771,408,992
October 2008	800,000,000	800,000,000
September 2008	1,754,531,270	1,400,000,000
Total	**8,151,393,717**	**6,552,613,705**

Table 1 suggests that Sigma could plausibly survive its $1.75 billion in September 2008 maturities. Perhaps, viewed from the summer of 2008, Sigma could also pay its $800 million in October 2008 maturities. But anything beyond that would require another strategy. Sigma could not survive to June 2009 through repo borrowing. An estimated $3 billion in repo availability would not cover $6.5 billion in maturing liabilities.

Could Sigma survive in another way? Not easily. Consider first asset maturities. Only 7.8% of Sigma's assets were scheduled to mature within one year.[43] So, perhaps, 6% of its assets would mature in the 9-month period at issue. That would be about 6% * $27.5 billion = $1.65 billion. But most short-dated assets were likely already pledged. Suppose $1.5 billion was pledged, against $1.35B in repo loans. That would leave $300 million in maturing assets that didn't need to be used to repay repo. In other words, every dollar in maturing assets would free up only about 18 cents to repay liabilities.

The same logic applies to asset sales. Suppose that Sigma sold $1 billion in pledged assets, and realized the value that the repo lenders assigned to them. This would reduce pledgeable assets by $900 million, and repo loan capacity by $810 million. The remaining $190 million (19%) would be available to pay maturing liabilities. Ratio trades would work the same way. For every dollar of asset dispositions, whatever their form, Sigma's repo borrowing capacity would drop by 81 cents.

Thus, roughly speaking, to pay $6.5 billion in maturing liabilities, Sigma needed to borrow $3 billion in additional repo, roll its existing repo lines, and then obtain cash, principally through asset sales, for $3.5 billion /(0.19) = $18.4 billion in assets. If it obtained higher prices than the repo lenders were assuming, it could sell modestly fewer assets. For example, if Sigma could sell assets for 5% more than the value assigned by the repo lenders, it could use 24% of the proceeds (instead of 19%) to repay maturing senior debt, and would need to turn only $14.6 billion of assets into cash. But if it obtained lower prices than the repo lenders were assuming, the need for asset sales would soar. If it sold assets on average for 5% *less* than the value assigned by the repo lenders, it would need to sell $25 billion of assets – almost its entire portfolio!

Could Sigma achieve all this before falling off the repo cliff? Likely not. If it could sell assets in that volume, for acceptable prices, it would have done so before coming so close to the repo cliff. That Sigma was so close to the cliff was a strong sign that its assets were not salable – at least at prices that would let it survive. It had been selling its more readily salable, often shorter-dated assets, leaving the less marketable, often longer dated ones. Moreover, Sigma's desperation would be known to potential buyers, which would adversely affect the prices it could achieve.

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[43] Sigma Monthly Report (Aug. 2008).

B. No Margin of Safety

The analysis above also implies that, as Sigma approached the repo cliff, it had no safety margin for further deterioration in asset prices, or for repo lenders to be assigning lower values than I have estimated. Suppose, for example, that the market value of Sigma's assets fell by 5% from the level I assumed above. Sigma's maximum repo level would decline by the same 5%, or about $1 billion. To make up this loss in repo borrowing, it would have to sell or ratio trade an additional $5 billion in assets.

C. Valuing Sigma's Assets

In the analysis above, I estimate the repo collateral value of Sigma's assets at $25 billion, versus the $27.5 billion in market value that Sigma reported. What can be said about the realism of that estimate? As best I understand Sigma's less than clear monthly statements, those statements reported Sigma's estimates of the market value of its assets, but do not separately report face value. Sigma had advised Moody's that the average market value was 95.6% of face at the end of March 2008.[44] That percentage might have been an overestimate when made -- Sigma had reason to estimate on the high side, and didn't disclose enough data for investors to develop their own estimates. Lisa Shin estimated a ratio of 88.6% in mid-August.[45] How much of her lower values reflect Sigma assigning optimistic values, and how much reflects deterioration in the market between March and August, I cannot tell. Sigma also told Moody's that its sale prices had been modestly lower than its estimated market values – another sign of optimistic valuation, especially since Sigma

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[44] Moody's downgrade report on Sigma Finance (April 4, 2008).

[45] Email from Lisa Shin to Sandie O'Connor (Aug 13, 2008), O'Connor Exh. 14.

was likely selling its more easily salable assets, and could hold onto assets where the true market value was lower than its estimate, rather than recognize a larger-than-estimated loss on sale.

Moody's also advised that "With respect to repo, counterparty asset prices are in some cases lower than those sourced by Sigma." In other words, Sigma might estimate an average value of 95.6% of face, but its repo lenders were lending on lower values. How much lower, Moody's did not say, but the amount was likely significant, given Sigma's unwillingness to disclose this information to investors, not to mention cancelling the Fitch rating in January 2008 after Fitch asked.

Taking these factors together, I consider my estimate to be reasonable, given the information available to JP Morgan in mid-2008. We learned later what haircuts the repo lenders had obtained. Sigma's repo borrowing when it failed was $17.4 billion, against $25 billion on (apparently face) amount of assets, with the $8 billion difference split roughly evenly between initial margin and variation (mark-to-market) margin.[46] Thus, my estimate is better than Sigma's actual experience.

D. Responses to the Approaching Cliff

JP Morgan should have done its best to estimate where the repo cliff was. Had it done so, it would have been apparent that the gamble of holding June 2009 Sigma notes was a bad one. Instead, as best I can tell, JPM Securities Lending never saw the cliff, and never conducted an analysis like the one I conducted above.

The only record I can find of a JP Morgan recovery analysis is by Lisa Shin in mid-August 2008.[47] To conduct her analysis, Ms. Shin estimated the market value of different types of assets. She then estimated what fraction of each asset type was not pledged to repo. However, her

[46] Moody's Report on Sigma (Sept. 30, 2008).

[47] Email from Lisa Shin to Sandie O'Connor (Aug 13, 2008), O'Connor Exh. 14.

assumptions and the basis for them are not stated, and I am aware of no source from which she could have obtained them. She had asked Sigma for this information in the spring of 2008 and not received it. Did she guess? If so, on what basis?

Whatever the basis for her guess, she grossly underestimated the amount of assets pledged to repo lenders. When Sigma defaulted, she wrote in surprise to John Donohue that Sigma had pledged $25 billion of assets to support $17.5 billion of repo financing, leaving only $2 billion in unpledged assets.[48] These were low quality assets besides, but that should not have surprised anyone.

How did Lisa Shin go so far wrong? It is possible that she assumed that the repo haircut was limited to a maximum of 10% of face value, or perhaps 10% of the market value reported by Sigma, instead of 10% of the unreported value estimated by the repo lenders.[49] This would be a gross error – if this were the case, Sigma would not have been so secretive about the level of pledged assets. It is possible she used the percentages of pledged assets from a Moody's report in July 2008, and assumed both that all assets for which Moody's had not given a repo percentage in July were 100% unpledged, and that the pledge percentages had not risen since.[50] This too would be a gross error. Either way, the recovery analysis conducted by Lisa Shin in August 2008 was severely flawed, and not what I would expect of a prudent expert, evaluating a major position.

[48] Lisa Shin instant message exchange with John Donohue (Sept. 30, 2008), Donohue exh. 30.

[49] This interpretation is consistent with her surprise at the actual haircut and her comment that "in their docs they say the max haircut ori repo was 10%." Lisa Shin instant message exchange with John Donohue (Sept. 30, 2008), Donohue exh. 30.

[50] This source of error is hinted at in an Aug. 29, 2008 updated analysis. Email from Lisa Shin to Sandra O'Connor (Aug 20, 2008) (included in O'Connor exh. 15).

E. The Lehman Bankruptcy

JP Morgan may argue that Sigma failed because of the Lehman bankruptcy and the resulting disruption in credit markets, which could not have been foreseen until it happened. The analysis above shows that this is incorrect. The Lehman bankruptcy may have provided the final nudge that sent Sigma over the repo cliff. Without that nudge, Sigma might have tottered on for another month or two. Beyond, that, its survival strategy was not apparent.

Lehman or no, the maturities would keep coming: $800 million in October; $800 million in November; $700 million in December. Another $2.1 billion in the first three months of 2009. Sigma had no apparent way to meet these maturities, nor a safety margin to handle deterioration in prices. Could Sigma have survived, without Lehman? I strongly doubt it. I also believe that a prudent expert, managing a highly conservative portfolio, should not have waited around to find out.

IX. Other Twists on This Story

1. JP Morgan was Sigma's Principal Repo Lender

A twist on this story of the unseen repo cliff: JP Morgan was Sigma's principal repo lender. It knew exactly where the cliff was. Moreover, its actions as repo lender put it in direct conflict with its clients' interests. The more repo Sigma did, the better for the repo lenders, including JP Morgan, who earned fees and took enough collateral to cover its loans. Yet the more repo, the closer the cliff and the less was left for noteholders. The more aggressive the repo lenders were in protecting themselves by assigning low market values to Sigma's assets, again the better for them and the worse for noteholders.

Can a claim be made that repo lending was fair to the Sigma noteholders? I think not. First, the central feature of repo was that, as compared to natural amortization, the more repo Sigma did,

the worse for all noteholders taken together. If Sigma's estimates of market value, or Lisa Shin's estimates of recovery through amortization, were to be believed, Sigma could pay all noteholders over time, if they were patient. The repo alternative promised large losses.

Can JP Morgan claim that if it didn't lend, another repo lender would have done so, on similar terms, so the harm would have occurred anyway? First, this is not for a fiduciary to determine. "If I hadn't harmed you, someone else would have" is not a defense to a claim that the fiduciary acted to benefit itself at its beneficiary's expense. Second, the harm might not have been the same. If JP Morgan didn't lend, as repo provider, maybe others would have. But maybe not, or only in smaller amounts, with less harm to Sigma's overall value. There is the further problem that we don't know how the terms JP Morgan received compared to the repo terms offered by other lenders.

2. JPM Securities Lending Never Saw the Cliff

A second, crucial twist: Lisa Shin and Jim Wilson, the main decisionmakers on whether JPM Securities Lending would hold Sigma notes, appear to have not understood the repo dynamics and the approaching cliff. They viewed Sigma's use of repo as a positive, because it let them avoid selling assets for less than face.[51] Shin may have thought that Sigma was pledging assets in return for loans at a haircut either to *face value*, or to Sigma's own estimate of market value. Certainly, she did not take into account the potential for repo collateral value to be significantly lower than this, and hence the amount of pledged assets to be higher.[52]

[51] Shin Dep. at 39-40; J. Wilson Dep. at 266.

[52] One sees this apparent blind spot throughout her analysis, but most clearly in her surprised reaction when Sigma turned out, when it defaulted, to have pledged $25 billion in face value of assets for only $17.4 billion in repo loans. Lisa Shin instant message exchange with John Donohue (Sept. 30, 2008), Donohue exh. 30.

It is one thing to gamble, another to gamble understanding the game but not knowing the odds, and a third to gamble, not even understanding the game. Lisa Shin and Jim Wilson understood neither the odds nor the game. It is unclear from the record what assumptions Lisa Shin made in estimating repo pledge amounts, which were a crucial element of her estimates of recovery given default were based on. But those estimates were badly flawed by her misunderstanding of the repo transactions.

3. Others in JP Morgan Understood the Risk

A third twist is that others within JP Morgan appear to have understood what Lisa Shin and Jim Wilson failed to – financing with repo was likely to end badly for the remaining Sigma notes. As early as August 2007, JP Morgan's John Kodweis, who had long experience with Sigma because JP Morgan was one of the dealers for Sigma notes, concluded that it was "probable" that "the entire [SIV] sector unwinds." He also noted that the rating agencies were allowing SIVs to use repo financing, something they allowed "only under extraordinary circumstances", which "[did] not work in any meaningful way."[53] A JP Morgan analyst report from September 2007 described the SIV business model as being in "serious jeopardy" with a "grim outlook."[54] JP Morgan's Tony Best, by early October, saw no point in efforts to rescue Sigma and other SIVs, writing to Kodweis that "These standalone sivs are gone."[55] In November 2007, JP Morgan CEO Jamie Dimon stated

[53] Email from JP Morgan Managing Director John Kodweis to Eric Rosen (Aug. 23, 2007).

[54] JP Morgan Securities, SIVS More Questions Than Answers (Sept. 7, 2007), Shin Exh. 16.

[55] Email from Tony Best of JP Morgan to John Kodweis (Oct. 01, 2007).

publicly his view that standalone SIVs like Sigma would "go the way of the dinosaur" because they "don't have a business purpose."[56]

In December, 2007, JP Morgan's Alex Roever was puzzled by Sigma's belief that they could survive. In his view, their path of repo and voluntary liquidation left them "headed straight into a brick wall."[57] In February 2008, JP Morgan's Kevin Fiori wrote to a number of JP Morgan executives, that "Investors are becoming increasingly concerned about Sigma given" [its failure to propose a restructuring plan]."[58] By April 2008, Kodweis didn't expect Sigma to "make it through the next three months."[59] Fiori's weekly update advised that "Sigma Finance and its potential unraveling remains the predominant issue facing front end investors [meaning JPM Securities Lending and similar money market investors] at the moment."[60]

JP Morgan's Jim Sexton warned Lisa Shin in March 2008 to worry about her assessment of Sigma, commenting that "If Sigma . . . has a collateral call associated with the repo, we could find that the [capital] cushion [protecting the senior notes] is much less [than Shin's estimate]. Please be sure you have some sense of this risk as it is currently very real."[61] I can find no evidence in the record that Shin reflected this comment in her risk assessments.

I could continue in this vein. But the point is clear. People at JP Morgan with stronger analytical skills than Lisa Shin, and better understanding of the SIV business model, thought by Fall

[56] Sree Vidya Bhaktavatsalam, Blackrock's Fink Says Subprime Credit Losses to Rise (Update3), Bloomberg.com, Nov 14, 2007, Shin exh. 14.

[57] Email exchange between Alex Roever and John Kodweis (Dec. 21, 2007).

[58] Email from Kevin Fiori of JP Morgan to JP Morgan CEO Jamie Dimon and others (Feb. 7, 2008).

[59] Email from John Kodweis to Kevin Fiori (Apr. 2, 2008).

[60] Email from Kevin Fiori of JP Morgan to JP Morgan CEO Jamie Dimon and others (April 10, 2008).

[61] Email from JP Morgan's Jim Sexton to Lisa Shin (March 6, 2008).

2007 that Sigma would not survive long-term, and by Spring 2008 that it might not survive the summer. Yet JPM Securities Lending continued to hold its mid-2009 maturities.

This is not to say that Lisa Shin was unworried. But her worry came too little, too late. The first apparent sign of worry is a February 2008 email in which, after speaking to John Kodweis, she asks how "nervous" about Sigma she should be, and remarks that "they are running out of options."[62] As Sigma ran out of options, so did JP Morgan's clients.

4. Other Signs that Lisa Shin Was Over Her Head

I have given some examples of Ms. Shin's flawed analysis above, but there are others to be found. Here are two more: First, she assumed that if Sigma's assets had a 3.5 year weighted average life, this meant 30% of its assets would mature each year and this "helps a lot with [reducing] what they have to sell."[63] This is doubly wrong; wrong as a matter of arithmetic, and contradicted by Sigma's monthly statements, which reported the fraction of assets maturing within one year and within two years.

Second, she believed that if Sigma were to become insolvent, liabilities maturing within one year would get payment priority over later-dated liabilities.[64] This was true but incomplete. Liabilities maturing within 60 days received preference over liabilities maturing within one year but not within 60 days.

[62] Email from Lisa Shin to Gene O"Shea of JP Morgan (Feb. 8, 2008).

[63] Email from Lisa Shin to Liliana Slavova (Jan. 31, 2008), included in Shin exh. 10.

[64] See TSS Risk Committee minutes (Aug. 25, 2008), Shin exh. 8.

Third, her recovery analysis, in addition to pulling from the air amount for unpledged assets, appears to assume that Sigma's capital notes represented real assets that would enhance the recovery to the senior notes – or at least this is how I read her opaque analysis.[65]

X. Unpursued Exit Strategies

Even after imprudently buying an overly large position in Sigma, JP Morgan still had exit strategies available to it. First, the market for Sigma notes was open, in some amounts, at some times. An early exit from the later dated notes at reasonable prices was likely feasible, even after the crisis hit in August 2007. Second, Sigma was offering to swap its underlying assets for MTNs, on various terms at various times. Third, JP Morgan, as one of the largest MTN holders, could have approached Sigma with its own swap proposal.

Sigma would likely have been open to a reasonable proposal from JP Morgan. After all, it knew the cliff was coming. Asset-for-notes swaps, roughly dollar for dollar, were far better than repo borrowing at well below a dollar for a dollar of assets. JP Morgan would swap asset risk for notes risk, but that was a good bet. If the assets were good, as JP Morgan believed, the ratio trade would remove the cliff risk.[66] If the assets were no good, the notes would be no good either.

Thus, I am unpersuaded that JP Morgan was locked into its investment. The size of its investment in MTNs made it harder to sell those notes to other investors. But size was a positive, when it came to negotiating a ratio trade. Sigma was far better off agreeing to swap notes at face for assets at face, than borrowing against the assets, at a hefty discount to market, in order to repay notes

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[65] Email from Lisa Shin to Sandra O'Connor (Aug 13, 2008), O'Connor Exh. 14.

[66] See, for example, Email from Lisa Shin to Sandra O'Connor (Aug. 13, 2009), O'Connor exh. 14, which includes estimated values for Sigma's assets if held to maturity

at face. Indeed, Sigma was better off swapping notes at face for assets at *market*, which might let JP Morgan gain from the ratio trade over time.

As the analysis of cliff risk above shows, Sigma needed to unload assets, in large quantities, to remain afloat. JP Morgan could offer to help it survive, through a suitable ratio trade. A trade that benefited both sides could likely have been arranged. JP Morgan would have avoided the cliff risk.

Many other investors conducted ratio trades with Sigma. A Moody's report from July 2008 indicates that Sigma had disposed of $8.4 billion in assets through ratio trades, up from $4 billion in the prior report.[67] Many of these trades were likely privately negotiated. JP Morgan was in an excellent position to negotiate a large ratio trade that would have protected Securities Lending against the cliff risk, on terms that would lead to little or no loss of principal.

JP Morgan, however, never seriously investigated this potential exit. Lisa Shin appeared to rule it out, because long-dated assets might not be allowed for money market funds.[68] Jim Wilson engaged in preliminary exploration in May, but found the terms unattractive.[69] Both appeared to assume that the only options were to sell Sigma notes at market prices or accept the ratio trades that Sigma was offering. In my opinion, given the looming cliff risk, JP Morgan should have aggressively explored all possible exits, including this one. Failure to do so was imprudent.[70]

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[67] Moody's Downgrade Report on Sigma (July 14, 2008).

[68] Lisa Shin apparently never considered ratio trades because she believed that 2a7 funds could not hold maturities beyond one year. Lisa Shin email to Travis Spence (Apr. 8, 2008), Shin exh. 4. This regulatory limit would not affect JPM Securities Lending.

[69] Email from Jim Wilson to various others in JP Morgan (May 9, 2008), J. Wilson exh. 27; see also O'Connor Dep. at 127-29 (Securities Lending made no effort to sell Sigma MTNs).

[70] Many Sigma assets had maturities longer than the CashCo guidelines, but these guidelines refer to what assets JP Morgan could "purchase," and might not apply to a swap, especially one intended to reduce risk. In any case, the guidelines could presumably be waived by investors. JP Morgan Chase Bank, N.A. Cash Collateral Fund Investment Guidelines (undated, approx. 2007) (included in exh. A to MABSTOA complaint). Moreover, if need be, JP Morgan

XI. Disclosure to Investors

Disclosure of JP Morgan's repo role to its Securities Lending and Asset Management clients would not cure the conflict between the repo lending and the interests of Securities Lending and Asset Management clients, but was surely better than no disclosure. Yet JP Morgan never disclosed its conflicting role.[71] Had it done so, this could have affected investor decisions whether to hold Sigma notes, for investors with individual accounts. It could also have led investors without this discretion to press JP Morgan to address the conflict in some way. Even if the conflict was permissible (which another expert is addressing), I can see no excuse for not disclosing it to investors.

Similarly, disclosure of the blind gamble that Securities Lending was making, by holding the June 2009 Sigma notes, would not cure an imprudent decision to invest, or an subsequent imprudent decision to hold, but was surely better than no disclosure.

JPM Securities Lending might have said something like this:

- We hold a large illiquid position in Sigma MTNs for both collective account and individual account clients: [Details].
- The funding model for Sigma and other SIVs is broken. Sigma can't issue new MTNs as the old ones mature; it can't issue capital notes to cover deterioration in equity value; and it can't sell many of its assets at reasonable prices.
- JP Morgan's analysts believe that the SIV model is unrepairable. We expect Sigma to fail, the only question is when and with what losses.
- Sigma is funding MTN maturities largely with repo loans, but has refused to provide details on the amount of collateral ceded to its repo lenders. Overcollateralization of repo lenders means undercollateralization for Sigma's senior notes.

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could have bought the longer-dated assets from Securities Lending or Asset Management, or exchanged them for shorter dated assets.

[71] O'Connor Dep. at 165.

- The longer that Sigma pays maturing notes by using repo borrowings, the lower its ratio of unpledged assets to liabilities, and the lower the likely recovery when they run out of repo borrowing capacity and default.
- We might be able to "ratio trade" Sigma notes for Sigma's assets – on what terms we won't know unless we inquire, but they have done ratio trades with others, should be a motivated trader, and have few other options. You would then take the risk on the assets, but our opinion is that most of Sigma's assets are solid and likely to pay off in full. The price we would "pay" in a trade for Sigma's assets would reflect the relative risks of nonpayment on Sigma's MTNs versus nonpayment on its assets.

We look forward to speaking with you about this challenging situation.

XII. Conclusion

How did JPM Securities Lending go so far wrong? How did it accumulate such a large position in an issuer whose business model was prone to liquidity risks? Why did it not appreciate the bulldozer risk to which Sigma was exposed. Once the bulldozer started rolling and pushing Sigma toward the repo cliff, why did JP Morgan not see the cliff approaching? How did it misjudge recovery given default so badly? Why did it not explore exit, most likely through a ratio trade, more aggressively?

Before the 2007 financial crisis, securities lending was a sleepy, apparently safe backwater. Not someplace one would put stars. Jim Wilson was a buy and hold guy, who had never sold a single asset in his 15 years at JPM Securities Lending. He didn't know how to assess when to sell (or ratio trade) and when to hold. He didn't know how to approach Sigma, to propose a ratio trade. So he held, and hoped for the best. Lisa Shin had limited finance training and made serious mistakes in assessing the Sigma risk and the likely recovery given default.

Are the errors understandable? Sure. Does JP Morgan's conduct satisfy a prudent expert standard? Not even a close question, in my view. Instead, JP Morgan engaged in multiple imprudences, analytical errors, and disclosure failures, discussed above.

Bernard S Black

Bernard S. Black

Appendix A: Curriculum Vitae

Bernard S. Black
August 2010

From Sept. 1, 2010: Nicholas D. Chabraja Professor, Northwestern University:
School of Law and Kellogg School of Management, Finance Dept.
Faculty Associate, Northwestern University Institute for Policy Research

Through Aug. 31, 2010: University of Texas at Austin:
Hayden W. Head Regents Chair for Faculty Excellence, School of Law, and Professor of Finance, Red McCombs School of Business

tel: (312) 503-2784 (Northwestern law school); 847-491-5049 (Kellogg)
cell: (650) 773-0955
e-mail: bblack@northwestern.edu
Research on SSRN at *http://ssrn.com/author=16042*

EMPLOYMENT

2010-	Northwestern University: Nicholas D. Chabraja Professor, School of Law and Kellogg School of Management
2004-2010	University of Texas: Hayden W. Head Regents Chair for Faculty Excellence, School of Law, Professor of Finance, McCombs School of Business, and Director, Center for Law, Business, and Economics
1998-2004:	Stanford Law School: Professor of Law, (George E. Osborne Professor 2003-2004)
1988-1998:	Columbia Law School: Professor of Law (Assoc. Prof. 1988-1991)
1994-1995:	Senior Policy Advisor (resident in Moscow, Russia), Harvard Institute for International Development, Russia Legal Reform Project
1987-1988:	Counsel to Commissioner Joseph A. Grundfest, Securities and Exchange Commission
1983-1987:	Private practice with Skadden, Arps, Slate, Meagher & Flom, New York, specializing in mergers and acquisitions, securities law, and corporate law
1982-1983:	Law clerk to Judge Patricia M. Wald, U.S. Court of Appeals, District of Columbia Circuit

PRINCIPAL COURSES

Corporations
Corporate Finance
Corporate Acquisitions
Health Law

Law and Economics

PROFESSIONAL BOOKS

Bernard Black, David Hyman, Charles Silver, Kathryn Zeiler & William Sage, **To Sue is Human: A Profile of Medical Malpractice Litigation** (Yale Univ. Press, forthcoming 2010)

Бернард Блэк, с соавторами Брайан Чеффинс, Мартин Гелтер, Матиас Симс, Ричард Нолан, Хва-Джин Ким, Анастасия Фарукшина, и Юридическая фирма «Линия права», **Правовое регулирование ответственности членов органов управления: анализ мировой практики** (Альпина Паблишерз, 2010, 332 стр.) (http://ssrn.com/abstract=1528182)[1]

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Negotiating and Drafting the Acquisition Agreement (ALI-ABA Transactional Skills Series 1998, 303 pp.)

Ronald Gilson & Bernard Black, **(Some of) the Essentials of Finance and Investment** (Foundation Press 1993; 252 pp.)

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Бернард Блэк и Анастасия Фарукшина, Стразование ответственности членов органов управления, возмещение расходов и авансирование судебных издержек, Журнал "**Акционерное общество: Вопросы корпоративного управления**" (июнь 2010) (http://ssrn.com/abstract=1621349)[3]

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[3] . (Bernard Black & Anastasiya Farukshina, *D&O Insurance, Indemnification, and Advancement of Legal Expenses*, **Joint Stock Companies: Issues of Corporate Governance** (June 2010) (article is in Russian).

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[7] (Bernard Black & Anastasiya Farukshina, *Liability of Directors for Actions with Regard to Subsidiary and Dependent Companies* **Joint Stock Companies: Issues of Corporate Governance** (Sept. 2009) (article is in Russian)

[8] Bernard Black & Anastasiya Farukshina, *The Concepts of Reasonableness and Good Faith in Russian Legislation and International Practice*, **Joint Stock Companies: Issues of Corporate Governance** (part 1, April, part 2, May 2009) (article is in Russian)

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[12] The full Report, *Comparative Analysis on Legal Regulation of the Liability of Members of the Board of Directors and Executive Organs of Companies* (2006), is available *at* http://ssrn.com/abstract=1001990 (English version) and http://ssrn.com/abstract=1001991 (Russian version).

[13] Reprinted in P.L. Jayanthi Reddy ed., **Medical Malpractice Liability: Emerging Issues** 130-152 (2009).

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2006 Bernard Black, Hasung Jang & Woochan Kim, *Does Corporate Governance Affect Firms' Market Values? Evidence from Korea*, 22 **Journal of Law, Economics and Organization** 366-413 (2006) (nearly final version at http://ssrn.com/abstract=311275)[18]

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[15] A gently updated version of this Report was published in book form in 2010. See above.

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[17] Reprinted in Joseph McCahery & **[to come]**, **[title and details of Hedge Funds book to come]**.

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Kowsar Yousefi and Bernard Black, *Settlement Bargaining With an Insurer Duty to Settle, Theory and Evidence from Texas Medical Malpractice Claims*

Healthcare Quality and Infection Process Control Reporting

Cystic Fibrosis Outcome Reporting

David Hyman, Bernard Black, and Charles Silver, *The Effects of Pretrial Process Reform: Evidence from Texas Medical Malpractice Cases* (working paper July 2008) (http://ssrn.com/abstract=1xxxxxx)

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Бернард Блэк & Анастасия Фарукшина, Размер ответственности членов органов управления общества: международный опыт, **Корпоративные Споры** (forthcoming 2009) (Bernard Black & Anastasiya Farukshina, The Measure of Damages for Corporate Directors: International Experience)

Vladimir Atanasov, Bernard Black & Conrad Ciccotello, *Option Megagrants* (working paper forthcoming 2008) (http://ssrn.com/abstract=xxxxxx)

The Elements of Corporate Governance Risk: Evidence from Russian Firms (with Inessa

Love and Andrei Rachinski)

Outside Director Liability: Market and Regulatory Equilibrium (with Brian Cheffins and Michael Klausner) (plus book project including this and our two prior papers on outside director liability)

Corporate Law and Residual Claimants (working paper May 2001) (partial draft at http://ssrn.com/abstract=1528437) (plus book project including the next two papers)

The Building Blocks of Corporate Governance (working paper January 1998) (with Charles Sabel)

Employees as Residual Claimants: What Control Rights Should They Have?

Path-Dependent Competition for Corporate Charters: Manager Choice, Shareholder Veto (with Reinier Kraakman)

The Essentials of Corporate Finance and Investment (with Henry Hu) (textbook project; completion expected sometime)

An Information Asymmetry Analysis of Lock-Up Options

LANGUAGES

Native English

Good reading and conversational fluency in Russian

LEGISLATIVE AND REGULATORY TESTIMONY AND ADVICE

Non-U.S. Advice

- Policy advisor to the Russian Federal Service on the Capital Market on (i) a draft law on insider trading and market manipulation, and (ii) amendments to the Civil Code, Law on Joint Stock Companies, and Law on Limited Liability Companies with respect to fiduciary duties of directors, managers, and controlling shareholders, 2006
- Policy advisor to the Ministry of Justice of Indonesia on company law reform, 2000
- Policy advisor to the Ministry of Justice of South Korea on corporate governance, 1999-2000
- Policy advisor to the Government of Mongolia 1996-2001 on company law and securities law; principal drafter for *Law on Companies* (1999)
- Policy advisor (1997-1999) to the Government of Vietnam for *Law on Enterprises* (1999)
- Policy advisor for draft Armenian law on joint stock companies, 1999
- Policy advisor (1998-2000) on company law and mutual fund law to the Ukrainian Securities Commission

- Policy advisor (1993-1997) on company law, securities law, investment fund law, and privatization of state-owned enterprises to the Russian Privatization Ministry (Госкомимущество) and the Russian Federal Securities Commission (Федеральная комиссия по ценным бумагам); advisor on *Law of the Russian Federation on Limited Liability Societies* (1998); advisor and co-drafter for *Law of the Russian Federation on Joint Stock Companies* (1996); advisor and co-drafter of *Decree of the President of the Russian Federation on Unit Investment Funds* (issued 1995), portions incorporated into *Law of the Russian Federation on Investment Funds* (2002)

U.S. and State Advice

- Testimony before Texas State Senate, State Affairs Committee, on medical malpractice reform (2008)
- Written testimony to the Securities and Exchange Commission on proposed amendments to the proxy rules (1997)
- Oral and written testimony on *Electricity Markets - 2005*, before the New York Public Service Commission (1995)
- Oral and written testimony on *What's at Stake in Retail Wheeling*, before the California Public Utilities Commission (1994)
- Written testimony on *Proxy Reform* to Securities and Exchange Commission (1991-1992)
- Participant, Securities and Exchange Commission Roundtable on *Corporate Governance and American Economic Competitiveness* (1992)
- Written testimony on *Unbundled Stock Units* to Securities and Exchange Commission (1989)

OTHER PROFESSIONAL ACTIVITIES

- Managing director (1998-), Social Science Research Network and its Legal Scholarship Network (family of electronic journals that publish abstracts of working papers in different areas of law, and related online database)
- Editor (1995-), Corporate and Takeover Law Abstracts, Corporate Governance Law Abstracts, Law and Finance Abstracts, and Securities Law Abstracts (electronic journals of abstracts published by Legal Scholarship Network)
- Research Fellow, European Corporate Governance Institute (2005-)
- Founding Board Member and Senior Research Associate, Global Corporate Governance Academic Network (2004-)
- Member, Board of Directors of Kookmin Bank (largest Korean commercial bank), and its Risk Management and Management Strategy Committees (2003-2005)

- Co-director, Directors' Consortium (director training program run by Stanford Law School and Chicago and Wharton Business Schools) (2002-2004)

- Editorial board member: *M&A Lawyer*; *Corporate Ownership and Control.*
- Advisory board member: *Journal of Korean Law*; *University of Bologna Center for Law and Economics*; *Fischer Center for Corporate Governance and Capital Markets Regulation at Tel Aviv University*
- Member (1995-1998) of the Committee on the Independent States of the Former Soviet Union of the Association of the Bar of the City of New York
- Member, Board of Directors (1989-1996) and Chair of the Audit Committee of Homeland Holding Corporation and its principal subsidiary, Homeland Stores (midsized publicly traded corporation)
- Chair (1994-1995) and chair-elect (1993-1994) of the Business Associations section of the Association of American Law Schools
- Member (1989-1992) of the Corporation Law Committee of the Association of the Bar of the City of New York
- *Bar memberships*: New York; Washington, D.C;. U.S. Supreme Court
- *Professional associations (not listed above)*: American Finance Association; American Law & Economics Association; American Bar Association; American Society of Law, Medicine & Ethics; New York State and District of Columbia Bars
- *Served as referee for*: Economic Inquiry; Financial Management, International Review of Law & Economics; Journal of Banking and Finance, Journal of Corporate Finance, Journal of Finance, Journal of Financial Economics; Journal of Law, Economics & Organization; Journal of Legal Studies; Journal of Risk and Insurance, Research in Law & Economics; National Science Foundation; Sloan Foundation.

CONFERENCES ORGANIZED

- Founding chairman, *Society for Empirical Legal Studies* (2006-2009)
- Organizer or co-organizer:

  First Annual Conference on Empirical Legal Studies (Univ. of Texas 2006)

  Stanford Law School, *Conference on Cross-Listing of Emerging Market Companies on Foreign Exchanges* (2002)

  Columbia Law School, *Conference on Alternative Perspectives on Corporate Governance* (1998)

EDUCATION

Stanford Law School -- J.D. 1982: Senior projects editor, *Stanford Law Review*; Sontheimer 3d-Year Honor (2d-highest 3-year GPA); Second-Year Honor (highest 2-year GPA); Johnson & Swanson Law Review Award

University of California at Berkeley: M.A. (A.B.D. in physics) 1977

Princeton University: A.B. 1975 magna cum laude in physics

PRESENTATIONS AT WORKSHOPS AND SEMINARS
(no of times or recent dates shown)

American Bar Association Annual Meeting
American Bar Foundation (2010)
American Law & Econ Ass'n (12) (thru 2010)
  ALEA (by coauthor) (6) (thru. 2010)
Amer. Soc. Law, Med. & Ethics, Annual Health Law Professors Conf (2, 2010)
Asian Institute of Corporate Governance (2)
Association of American Law Schools (4)
Ass'n for Comparative Economic Studies
Atlanta Finance Forum
Austin Bar Association
Australian National University
BSI Gamma Foundation
Brazil Securities Commission (CVM)
Canadian Law & Econ Association (5)
  CLEA (by coauthor) (2)
Chicago-Kent Law School
Columbia Business School
Columbia Law School (3)
Columbia Univ. Department of Economics
Conf. on Empirical Legal Studies (by coauthor) (7) (2009)
Cornell Law School
Dartmouth Univ., Tuck School of Business
Duke Law School *(2009)*
European Finance Association (2)
  EFA (by coauthor) (1)
Euro. Fin. Mgmt Ass'n Annual Meeting (2)
Fin. Mgmt Ass'n Annual Meeting
Fried, Frank, Harris, Shriver & Jacobsen
George Mason Law School (2)
Georgetown Law Center (2)
George Washington Law School
Georgia State Law School
Griffith University Law School, Australia
Harvard Business School
Harvard Law School (3)
Hong Kong Baptist Univ (2009)
Hong Kong Inst. Chartered Pub. Acc'ts (2009)
Hong Kong Securities & Futures Comm'n (2009)
Institutional Investor Forum
International Monetary Fund (2)
Int'l Society for New Institutional Economics
Kellogg School of Management (2009)
Kookmin Bank, Korea
Korea Corporate Governance Service
Korean Securities Law Institute
Korean Stock Exchange
Law and Society Association
Malaysian Securities Commission (2)
Michigan Law School
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Nanyang Business School, Singapore
National Bureau of Economic Research (2)
New Economic School, Moscow, Russia (2)
New York Stock Exchange
New York Univ., Stern School of Business (2)
Northeastern Univ., Gorbachev Foundation
Northwestern Law School (2009, 2010)
Princeton Univ., Wilson School of Public Affairs
Sao Paolo Stock Exchange, Brazil
Seoul Nat'l Univ, Korea, School of Business
Singapore Conference on Int'l Business Law
Stanford Business School
Stanford Center Russian & East European Studies
Stanford Law School (8)
Texas A&M College of Business
UCLA/USC Corporate Gov Roundtable (3)
U.S. Department of Justice, Antitrust Division
U.S. Securities & Exchange Commission
Univ. of Cal.-Berkeley, Boalt Hall of Law (2)
Univ. of Cal.-Berkeley, Haas School of Bus. (2)
Univ. of Chicago Law School
Univ. of Colorado - Boulder, College of Business
Univ of Georgia, Terry College of Business (2010)
Univ. of Melbourne Law School, Australia
Univ. of Miami Law School
Univ. of Michigan Law School
Univ. of Michigan, Ross School of Business
Univ. of Missouri - Columbia Law School
Univ. of Pennsylvania Law School
Univ. of Rochester, Simon School of Business
Univ. of Sao Paolo, Brazil, Law Faculty
Univ. of Southern California Law Center (2)
Univ. of Southern Calif., Marshall School of Bus.
Univ. of Texas, McCombs School of Business (4)
Univ. of Texas Law School (6)
Vanderbilt Law School
Woo Yun Kang Jeong & Han
World Bank (4)

CONFERENCES, SPEECHES, OP-EDs and COMMENTS

2010 Presentation of *The Value of Board Independence in an Emerging Market A Multiple Identification Strategies Approach Using Korean Data* 2010 University of Albert Frontiers in Finance Conference, 19th Annual Conference on Financial Economics and Accounting (Nov 2008)

Osler Hoskins lecture at Queen's Law School on *Due Diligence Failures and Remedies* (March 2010)

2009 Lecture on *Interpreting DiD and IV Estimates ATE LATE ATET and all That*, Conference on Empirical Legal Studies (Nov 2009) (http //ssrn com/abstract=1528462)

Organizer of Focus Session on *What Do We Really Know About How Corporate Governance Affects Firm Performance*, and Presentation of *Incentives Not to Know in the Market for Mortgage-Backed Securities*, *The Effect of Board Structure on Firm Value A Multiple Identification Strategy Approach Using Korean Data*, and *How Corporate Governance Affects Firm Value Evidence on Channels from Korea*, Centre for Economic Policy Research, European Summer Symposium in Financial Markets (Gersenzee, Switzerland, July 2009)

Presentation of *Corporate Governance in Brazil*, comment on Qing Yang, Yuning Xue, and Besim Yurtoglu, *Does the Strategic Role and the Control Role of the Board of Directors Exist in Chinese Listed Companies*, Second International Research Conference on Corporate Governance in Emerging Markets (Sao Paulo, Brazil, July 2009)

Presentation of *Due Diligence Failures and Remedies* Abraham Pomerantz Lecture (Brooklyn Law School, March, 2009), keynote speech at European Financial Management Conference on Corporate Governance and Control (Judge Business School, Cambridge Univ , April 2009)

Presentation of *How Corporate Governance Affects Firm Value Evidence on Channels from Korea*, 8th Darden-World Bank International Finance Conference (Darden School of Business, Univ. of Virginia, March 2009)

2008 Keynote speaker, Brazilian Corporate Governance Institute, 9th Annual Conference Ownership In Evolution New Forms of Corporate Control (Sao Paolo, Brazil, Dec 2008)

Keynote Public Lecture, *Identification Strategies in Corporate Governance Research*, Canadian Law And Economics Association 2008 Annual Meeting (Toronto, Canada, Sept 2008)

Commentator on Cecile Carpentier, Douglas Cumming and Jean-Marc Suret, *The Value of Capital Market Regulation and Certification IPOs versus Reverse Mergers*, Conference on Empirical Legal Studies (Cornell Law School, 2008)

Presentation on *The (Possible) Link Between Health Care Information and Quality Innovation*, Kaufman Foundation Summer Legal Institute (San Diego, July 2008)

Presentation on Debt Decoupling, INSOL conference (Chicago, July 2008)

Presentation of *Private Enforcement of Corporate Law A Comparative Empirical Analysis of the UK and the US* ECGI Corporate Governance Conference (Oxford, June 2008)

Presentation of *Debt Equity and Hybrid Decoupling* Conference on Credit Risk Analysis, Mitigation and Transference (Chicago, Feb 2008)

2007 Presentation of *Unbundling and Measuring Tunneling*, Columbia Law School Conference on Berle-Means Revisited (Dec 2007)

Presentation of *How Does Law Affect Finance?*, comment on Vidhi Chhaochharia & Luc Laeven, *Corporate Governance Norms and Practices*, International Research Conference on Corporate Governance in Emerging Markets (Istanbul Turkey, Nov 2007)

Keynote speaker on *Optimal Board Structure*, Amsterdam Center for Corporate Finance (Amsterdam, Nov

2007)

Lecture on *Instrumental Variables A Simpleminded Introduction*, Conference on Empirical Legal Studies (Nov 2007) (http //ssrn com/abstract=1528459)

Presentation of *Private Enforcement of Corporate and Securities Law A Comparative Empirical Analysis of the UK and the US*, Yale School of Management and Oxford Business School Conference on Shareholders and Corporate Governance (Oxford, Oct 2007)

Presentation of *Empty Voting and Other Decoupling Strategies II*, 6th European Company Law and Corporate Governance Conference Challenges for the Control of Corporate Europe (Lisbon, Spain, Oct 2007)

Keynote presentation on *Identification Strategies in Corporate Governance Research*, 7th Brazil Finance Society Annual Meeting (Sao Paolo, Brazil, July 2007)

Organizer and presenter (*Empty Voting and Other Decoupling Strategies*), special session on Shareholder Activism and Corporate Governance, European Financial Management Association 2007 Annual Meeting (Vienna, Austria, June 2007)

Participant, Millstein Center for Corporate Governance and Performance at Yale School of Management and Aspen Institute Business and Society Program Roundtable on *Corporate Governance Creating Value for the Long-Term* (New Haven, May 2007)

Comment on Tom Chang and Antoinette Schoar, *The Effect of Judicial Bias in Chapter 11 Reorganizations* (Conference on Financial Contracting Theory and Evidence, Mannheim, Germany, April 2007)

Keynote speaker on *Empty Voting*, European Corporate Governance Institute 2007 Annual Meeting (Apr 2007) (Frankfurt, Germany)

Presentation of *Can Corporate Governance Reforms Increase Firms' Market Values? Event Study Evidence from India*, Univ of Virginia Law School Conference on Law and Finance (Mar 2007)

Webcast on *Empty Voting - How Borrowed Shares Can Swing Votes*, National Investor Relations Institute (Mar 2007)

Comment on Helen Bowers and William Latham, *Information Asymmetry Litigation Risk, Uncertainty and the Demand for Fairness Opinions Evidence from US Mergers and Acquisitions 1980-2002* (Frontiers of Finance conference, Curacao, Jan 2007)

2006 Presentation of *The Value of Board Independence in an Emerging Market A Multiple Identification Strategies Approach Using Korean Data* Conference on Mel Eisenberg's The Structure of the Corporation Thirty Years Later (Columbia Law School, Nov 2006)

Presentation of *An Overview of Indian Corporate Governance Practices*, International Corporate Governance Forum-Asian Centre for Corporate Governance International Conference on Corporate Governance Role of Corporate Governance in Improving India's Investment Climate (Mumbai, India, Nov 2006)

Presentation of *Hedge Funds Insiders and Empty Voting Decoupling of Economic and Voting Ownership in Public Companies*, Boundaries of SEC Regulation Conference at Financial Economics Institute, Claremont-McKenna College (Feb 2006), Weil, Gotshal & Manges Roundtable at Yale Law School (Apr 2006)

2005 Invited panelist on *The Future of Corporate Governance Research*, Financial Management Association annual meeting (Oct 2005)

Lecture on *Takeover defenses US/UK Experience and Implications for Korea*, Korea Corporate Governance Service conference on The Market for Corporate Control and Corporate Governance (Sept 2005)

Presentation on *Executive Compensation How to Stop the Pay Spiral*, IC^2 Institute Conference in 21st Century Governance for Early Stage Companies (Austin, TX, June 2005)

Presentation of *Korean Corporate Governance A 2005 Progress Report*, Korea University conference on

Korea Toward the Next Hundred Years: Reality and Vision (Seoul, Korea, May 24, 2005)

Presentation of *Does Corporate Governance Predict Firms' Market Values Time-Series Evidence from Korea*, 4th Asian Corporate Governance Conference (Seoul, Korea, May 19, 2005)

Presentation of *Ranking Law Schools Using SSRN to Measure Scholarly Performances, in* Symposium, *The Next Generation of Law School Rankings* (Apr. 15, 2005)

Commentator on John Coffee, *Gatekeepers The Role (and Reform) of the Professions in Corporate Governance*, Columbia Law School, First Annual Deals Roundtable: Gatekeepers and Corporate Governance (Apr. 1, 2005)

Presentation of *Stability, Not Crisis: Medical Malpractice Claim Outcomes In Texas, 1988-2002*, AEI Health Policy Forum, Is There a Crisis in Medical Malpractice? New Evidence from Texas (March 31, 2005)

Bernard Black, Charles Silver, David Hyman & William Sage, *False Diagnosis*, **The New York Times,** March 10, 2005 (editorial based on *Stability, Not Crisis. Medical Malpractice Claim Outcomes In Texas, 1988-2002)* (http://ssrn.com/abstract=xxxxxx), expanded version published as *Hunting Down the Facts on Medical Malpractice*, **Austin American-Statesman**, March 14, 2005

Bernard Black, Brian Cheffins & Michael Klausner, *Why Directors Damages May Harm Investors*, **Financial Times**, Jan 20, 2005, at 19, and **Financial Post (Canada)**, Jan. 21, 2005, at xx (http //ssrn.com/abstract=xxxxxx) (editorial based on our work on outside director liability)

Commentator on Eric Talley & Gudrun Johnsen, *Corporate Governance, Executive Compensation, and Securities Litigation*, First Annual NYU/Penn Conference on Law and Finance (Feb. 2005)

Interview, *Corporate Governance Ups Co Value*, **Economic Times** (business section of **India Times**), Jan. 27, 2005, at (http://economictimes indiatimes com articleshow/1001951.cms)

Presentation of *Does Corporate Governance Affect Firms' Market Values? Evidence from Korea*, Roundtable on Financing of Early Stage ad Emerging Growth Companies, Foreign Investment Capital and the Indian Venture Capital Markets (Bangalore, India, Jan. 2005)

Presentation of *Predicting Firms' Corporate Governance Choices Evidence from Korea*, Seminar on Venture Capital and Corporate Governance - India and the USA (Hyderabad, India, Jan. 2005)

2004: Commentator on Jerry Davis and E. Han Kim, *Would Mutual Funds Bite the Hand that Feeds Them? Business Ties and Proxy Voting*, Journal of Financial Economics and Federal Reserve Bank of New York conference on Agency Problems and Conflicts of Interest in Financial Intermediaries (Dec. 2004)

Interview about *Outside Director Liability*, published as *Worried About Shareholder Suits? Fuhgedaboudit!*, **Corporate Board Member**, March/April 2004, at 20-25

Panelist, Columbia Law School Interdisciplinary Workshop on Law, Finance, and Political Economy (April 2004)

Presentation of *Liability Risk for Outside Directors A Cross-Border Analysis*, Across the Board An Interdisciplinary Conference on Corporate Governance, Univ of Texas, McCombs School of Business (April 2004)

Comment on Marcus Cole, *The Preference for Preferences*, Willamette Law School Conference on Venture Capital After the Bust (March 2004)

2003. Presentation of *Predicting Firms' Corporate Governance Choices Evidence from Korea*, KDI Conference on Corporate Governance and Capital Market in Korea (Dec. 2003); comments on Sung Wook Joh & Kayoun Yi, *Does Market React to Public Disclosure on Related Party Transactions in Korea*, and Choong-Kee Lee, *The Directors' Duties Regarding Compliance and Governance and the Operation of the Corporate Personality in the Context of a Financial Group*. Comments published in Young-Jae Lim ed., **Corporate Governance and Capital Market in Korea** (forthcoming 2005)

Commentator on Lawrence Hamermesh, *Premiums in Stock-for-Stock Mergers*, University of Pennsylvania Law School, Symposium on Control Transactions (Feb 2003)

Presentation of *Institutional Reform in Transition*, Asian Development Bank Institute, 4th Asian Policy Forum on Corporate Governance in China (Oct 2002), Stanford Institute for International Studies Conference on Corruption its Consequences and Cures (Jan 2003)

2002 Commentator on Darius Miller, *ADRs Analysts and Accuracy*, Stanford Law School, Conference on Cross-Listing of Emerging Market Companies on Foreign Exchanges (Nov 2002)

Presentation of *Outside Director Liability* Columbia Law School Conference on Global Markets, Domestic Institutions Corporate Law and Governance in a New Era of Cross-Border Deals (Oct 2001, Apr 2002)

Participant, National Bureau of Economic Research Conference on Corporate Alliances, Cambridge MA (Nov 2001) & Islamorada FL (Mar 2002)

2001 Keynote speaker on *The Role of Self-Regulation in Supporting Korea's Securities Markets*, Korea Stock Exchange International Conference on Self-Regulatory Institutions in the Korean Securities Markets (Dec 2001)

Commentator Stanford/Yale Junior Faculty Forum (June 2001)

Presentation on *The Core Fiduciary Duties of Directors*, Third Asian Roundtable on Corporate Governance (OECD & World Bank, Singapore, April 2001)

Presentations of *The Corporate Governance Behavior and Market Value of Russian Firms*, OECD Roundtable on Russian Corporate Governance, the Responsibility of Boards, and the Role of Stakeholders in Corporate Governance (June 2001), Conference on The Reform of Economic Law in East Asia, Stanford Law School (Mar 2001)

Participant, Dykstra Corporate Governance Symposium, Univ of California Davis Law School (Feb 2001)

2000 Presentation of *Does Corporate Governance Matter? A Crude Test Using Russian Data*, University of Pennsylvania Law School, Symposium on Norms and Corporate Law (Dec 2000)

Participant, University of Pennsylvania Law School Roundtable on Corporate Law (May 2000)

1999 Presentation of *Russian Privatization and Corporate Governance What Went Wrong?*, OECD Conference on Corporate Governance in Russia (Moscow, Russia, May 1999), Davidson Institute at Univ of Michigan Conference on Corporate Governance Lessons from Transition Economy Reforms (Sept 1999)

Participant, Conference on *The Anatomy of Corporate Law A Comparative and Functional Approach* (Paris, France, July 1999)

Workshop leader, International Monetary Fund Workshop on Comparative Corporate Governance in Developing and Transition Economies (June 1999)

Presentation of *The Legal and Institutional Prerequisites for Strong Securities Markets*, OECD Conference on Corporate Governance in Asia A Comparative Perspective (Seoul Korea, Mar 1999)

Participant, Workshop on Innovation in Business Law Education, American Bar Association Section of Business Law annual meeting (Apr 1999)

Presentation of *The Non-Correlation Between Board Independence and Long-Term Firm Performance*, Directors' College, Stanford Law School (Mar 1999), Federalist Society Conference on Corporate Governance (NY, Sept 1998) (remarks published in **Bank and Corporate Governance Reporter** (1999))

Participant, Conference on Armenian Company Law, Washington DC (Jan 1999) (conference with drafters of the Armenian company law to discuss concepts of company law)

1998 *Shareholder Robbery Russian Style*, in Institutional Shareholder Services, **ISSue Alert**, Oct 1998, at 3, 14 (editorial in newsletter for institutional investors) (http //ssrn com abstract=510123)

A Test Case for Shareholder Rights, **Moscow Times**, Jan 30, 1998 (editorial)

Participant, Conference on Ukrainian Company Law, Kiev, Ukraine, (Oct 1998) (seminar for legislators and government officials on draft company law)

Participant, Corporate Law Bridge Group conference (June 1998)

Presentation of *Path-Dependent Competition for Corporate Charters Manager Choice Shareholder Veto*, Comparative Law Workshop on the Regulatory State and Corporate Governance, Goethe Universitat, Frankfurt, Germany, (May 1998)

Speaker on comparative and international aspects of corporate law scholarship, Association of American Law Schools, Workshop on Business Associations (May 1998)

Speaker, U S Securities and Exchange Commission, *International Institute for Securities Market Development* (Apr 1998)

Presented paper, *Russian Firms Preventing Manager/Investor Disputes from Arising* Conference on *The Changing Landscape of Investment in Russia*, Moscow, Russia, (Apr 1998)

Invited speaker, *Seminar on the Draft Company Law*, Hanoi, Vietnam (Mar 1998) (week-long seminar for legislators and government officials on the draft company law, for which I was an advisor)

Presentation of *The Building Blocks of Corporate Governance*, Columbia Law School Conference on Alternative Perspectives on Corporate Governance (Jan 1998)

Speaker, *Seminar on the Law on Joint Stock Companies*, Ulaanbaatar, Mongolia (Jan 1998 (seminar for legislators and government officials on the Law on Joint Stock Companies, for which I was the principal drafter)

1997 *The Struggle for Control of Russia's Securities Markets*, **Moscow Times**, July 9, 1997 (editorial)

Participant in *Symposium Check-the-Box and Beyond The Future of Limited Liability Entities* (Larry Ribstein & Mark Sargent eds), 52 **Business Lawyer** 605-652 (1997)

Presentations of *Board Composition and Firm Performance The Uneasy Case for Majority Independent Boards*, Max-Planck Institute Conference on Comparative Corporate Governance (Hamburg, Germany, May 15-17, 1997), NYU Salomon Center Conference on The Power and Influence of Pension and Mutual Funds (Feb 21, 1997)

Lecturer, Open Society Institute workshop for Russian law teachers, on *the Russian Law on Joint Stock Companies* (Moscow, Russia, Nov 11-15, 1997)

Presentation of *Information Asymmetry the Internet, and Securities Offerings*, Lewis & Clark Law Forum, Financing Innovation The Future of Capital Formation for Small and Emerging Businesses (Sept 26, 1997)

Address on *The Struggle for Control of Russia's Securities Markets*, Harriman Institute Conference on Russian Securities on the American and Russian Capital Markets (New York, June 10, 1997)

Speaker for Plenary Session on *Stranded Costs*, National Conference of State Legislatures Conference, The Electric Industry in the Balance (New York, May 29-30, 1997)

Participant, USAID-sponsored conference with Vietnamese officials on draft *Law of Vietnam on Partnerships and Companies* (New York, Aug 26-30, 1997)

Lecturer, World Bank/Central European University workshop on *Corporate Governance in Eastern Europe and Russia* (Budapest, Hungary, May 12-16, 1997)

Speaker, World Bank Conference on *Legal Reform and Economic Development* (Apr 14, 1997)

1996 *Corporate Law for Emerging Markets The Case of Russia*, in **American Society of International Law, Proceedings of 90th Annual Meeting: Are International Institutions Doing Their Job?** 226-231 (1996)

Presentation of *Corporate Law and Residual Claimants*, Columbia Law School Conference on Employees and

Corporate Governance (Nov 22 & May 15, 1996)

Address on *The Path-Dependent Evolution of Corporate Law*, George Mason Law School Conference on Strong Managers, Weak Owners (May 4, 1996)

1995 Bernard Black *Legal Reform in Russia*, **Columbia Law School Report** 68 (Fall 1995) (short article for alumni magazine)

Presentations of *Corporate Law from Scratch*, World Bank Conference on Corporate Governance in Central Europe and Russia (Apr 22, 1994, Sept 30, 1994, Dec 16, 1994)

Address on *Investment Fund Law for Emerging Economies*, OECD Conference on Investment Funds in Ukraine (Paris, France, June 1-2, 1995)

1994 *Comment The Industrial Organization of Market-Making*, on Peter Reiss & Ingrid Werner, *Transacting Costs in Multiple Dealer Markets Evidence from the London Stock Exchange*, in Andrew Lo, ed , **The Industrial Organization and Regulation of the Securities Industry** 171-174 (1995)

Address on *The Essentials of Corporate Governance in Privatizing Economies*, World Bank Conference on Creating Capital Markets in Central and Eastern Europe (Prague, Czech Republic, Nov 17, 1994)

1993 Presentations of *Hail Britannia? Institutional Investor Behavior Under Limited Regulation* Whittemore Conference on The International Capital Acquisition Process (May 21, 1993), Columbia Law School Conference on Relational Investing (May 6, 1993)

1992 *Beyond Proxy Reform*, **Insights: Corporate & Securities Law Advisor** 2 (March 1993) (editorial)

Participant, *Roundtable on Management Incentive Compensation and Shareholder Value*, **Continental Bank Journal of Applied Corporate Finance** 110-130 (Summer 1992)

Comment, *Event Studies in a World with Signaling and Partial Anticipation*, on Kleidon & Scott, *The Replacement of Corporate Chief Executive Officers and the Performance of the Board*, American Law & Economics Association (May 16, 1992)

1991 Contributor to *Catch 22 The Retired CEO as Company Director* (Institutional Shareholder Services Special Report, July 15, 1991

Contributor to Roundtable discussion on *Institutional Investors and Corporate Governance*, published in **Directors and Boards** 9 (Spring 1991)

Presentation of *Agents Watching Agents* Columbia Law School Conference on The Future of Corporate Governance (May 11, 1991)

Address on *Environmental Sanctions When Does Deterrence Become Overkill?*, Columbia Journal of Environmental Law Symposium on Crimes Against the Environment (Mar 8, 1991)

Address on *Taking Long-Term Investing Seriously*, Institutional Shareholder Services Conference for the Proxy Professional (Feb 22, 1991)

1990 Conference presentation on *Hazardous Waste Cleanup Incentives in Corporate Acquisitions*, Columbia Business Law Review Symposium on Environmental Concerns in Business Transactions (Feb 9, 1990)

1989 Address on *The Long Term Profitability of Leveraged Buyouts*, Lowe Institute Conference on the Leveraging of Corporate America, Los Angeles (Apr 11, 1989)

1988 Presentation of *Is Corporate Law Trivial?*, Columbia Law School Conference on Contractual Freedom and Corporate Law (Dec 9, 1988)

Address on *Shareholder Gains from Takeovers*, Rutgers Conference on Corporate Takeovers, Restructuring, and the Market for Corporate Control (May 24, 1988)

Address on *Regulatory Reform after the Market Crash The Case for Flow Restrictors*, USC-UCLA

Conference on The Crash: Causes and Cures? (Feb. 13, 1988)

PERSONAL DATA

Born 1953 in Brooklyn, New York

Wife: Katherine Litvak

Children:	David (1979)	Benjamin (1980)	Samuel (1985)
	Sarah (1990)	Rebekah (1994)	Daniel (2005)
	Jacob (2008)		

Appendix B: Expert Reports, Depositions and Trial or Arbitration Testimony
Bernard Black
(as of August 2010)

2009:

Industrial Recovery Capital Holdings v. Simmons (Dallas District Court, Texas) (deposition for defendants)

> Testimony on compliance with duty of good faith owed by directors and officers of subsidiary to subsidiary's minority preferred shareholders

2008:

In re National City Financial Enterprises (S.D. Ohio 2008) (expert report and deposition for plaintiffs)

> Testimony on customary due diligence and disclosure practices of investment banker in private placement, red flags known to banker, and appropriate followup given those red flags.

In re Dollar General Shareholder Litigation (Davidson County, Tenn. 2008) (expert report and deposition for plaintiffs)

> Testimony on custom and practice in sale of company and leveraged buyouts, and importance to valuation of long-term growth projections.

In re Credit Suisse-AOL Securities Litigation (D, Mass 2008) (expert report and deposition for plaintiffs)

> Testimony on reasonableness and consistency with internally expressed opinions of analyst forecasts concerning AOL Time Warner

2007:

Garamella v. FitzSimons (California state case, challenging Tribune self-tender offer and going private transaction) (expert report and deposition for defendant)

> Testimony on existence of "market" check" on takeover bid price and harm to Tribune shareholders from injunction against self-tender.

2006:

AOL state securities litigation (Ohio and California cases) (expert reports for plaintiff)

> Report on various financial games played by AOL to inflate its financial results and the nature of its financial situation, compared to the results it disclosed.

In re Enron Securities Litigation (S.D. Tex. 2006) (expert reports and deposition for plaintiffs)

> Report, rebuttal report, and deposition on Enron's true financial results and the nature of its financial transactions, compared to the results it disclosed; and on Enron's solvency given those true results. Report available at 2006 WL 2432018 and http://ssrn.com/abstract=1528457.

IPOC International Growth Fund Limited v. OAO CT-Mobile (Arbitration, Stockholm Chamber of Commerce) (expert reports and testimony at arbitration hearing for respondent)

Report and arbitration testimony on Russian joint stock company law.

2005:

Norex Petroleum v. Chubb Insurance Co. (Queen's Bench, Alberta, Canada) (expert report and deposition for plaintiff)

Report on Russian judicial corruption.

Havens v. Pate (District Court for Harris County, Texas) (expert report, deposition, and trial testimony for plaintiff)

Report, deposition, and trial testimony on corporate governance custom and practice, director conduct, change-in-control benefits, and compliance with fiduciary duties in sale of a company (expert report and deposition for plaintiff)

Richard A. Williamson, Trustee v. AT&T Corp (Santa Clara County Superior Court, California) (expert report and deposition for defendant)

Report and deposition on corporate governance custom and practice for relationship between controlling and controlled company

American Savings Bank v. United States (Court of Federal Claims 2000) (expert reports and deposition for government)

Winstar case, involving cost to savings and loan of replacing lost supervisory goodwill, as a component of regulatory capital.

2004:

Citizens Federal Savings and Loan Association (Indiana) v. United States (Court of Federal Claims 2004) (expert reports, depositions, and trial testimony for defendant)

Winstar case, involving cost to savings and loan of replacing lost supervisory goodwill.

2002:

NorthPoint Communications v. Verizon Inc. (San Francisco Superior Court 2002) (expert report and deposition for plaintiff)

Case involving merger agreement termination, based on alleged material adverse change in seller's business; testimony on custom and practice in drafting merger agreements and material adverse change clauses.

Hewlett v. Hewlett-Packard Co. (Delaware Chancery Court 2002) (expert report and deposition for defendant)

Proxy fight case; deposition on nature of merger integration and materiality of alleged deficiencies in disclosure of post-merger projections.

Madden v. Deloitte & Touche (S.D. Cal. 2002) (expert report and deposition for defendant Prudential Securities)

Report and deposition on concept of underwriter, and due diligence obligation under Securities Act § 11 of financial advisor to the buyer in a stock-for-stock merger.

2001:

Dura Pharmaceuticals v. CIBC World Markets (Cal. Superior Court, San Diego, 2001) (deposition for plaintiff/cross-defendant)

Contract and takeover case: testimony on whether finder's fee agreement covers subsequent stock-for-stock merger and concept of equity investment by one company in another company.

2000:

Danis v. USN Communications (N.D. Ill. 2000) (expert report and deposition for independent director defendants)

Securities class action involving adequacy of disclosure in IPO prospectus, and whether the independent directors satisfied the requirements for the "due diligence" defense to liability under Securities Act § 11.

Forge v. Cyrix Corp. (Ca. Superior Court, Santa Clara County, 2000) (deposition for plaintiff)

Securities class action: involving adequacy of disclosure in proxy statement/prospectus for merger of National Semiconductor and Cyrix Corp.

1999:

Croucher v. MidCon Corp. Employee Stock Ownership Plan Administrative Committee (S.D. Texas, Houston Div. 1999) (expert report and deposition for plaintiff)

Class action involving whether the amount paid to redeem preferred stock held by the MidCon ESOP complied with the terms of the preferred stock and whether the basis for valuing the preferred stock was adequately disclosed to the ESOP participants.

Werbowsky v. Collomb (Md. 1999) (deposition for defendant)

Corporation law case: derivative lawsuit, involving whether outside directors acted reasonably and independently in negotiating and eventually approving a transaction between a foreign parent company and its majority owned, publicly traded U.S. subsidiary.

Albert v Walter Fletcher, Inc. (Los Angeles Superior Court 1999) (deposition for plaintiff)

Class action by members of trade association, involving whether the association's chief executive officer breached his fiduciary duty in buying the trade association, whether the investment bankers were negligent in preparing their fairness opinion, and whether the terms of the transaction were adequately disclosed to the association members in connection with their vote to approve the sale.

Risko v. Hollander (Alameda County CA 1999) (deposition and trial testimony for plaintiff)

Contract and partnership case: involving fiduciary duties of partners, and commercial reasonableness of claims by each side as to existence and content of oral agreement on profit sharing.

Fleischer v. Southern California Permanente Medical Group (Ca. Superior Ct. 1999) (deposition for defendant)

> Case involving mandatory retirement of a physical from the Kaiser medical group, and whether he was an employee or a partner in Permanente Medical Group

1998:

Mentor Graphics Corp. v. Quickturn Design Systems, Inc. 1998 WL 839079 (Delaware Chancery Court, 1998) (expert report, deposition and trial testimony for defendant)

> Expert report and testimony for defendant in Chancery Court, and consulting advice for appeal to Supreme Court, on whether Quickturn's takeover defenses were coercive or preclusive of potential bidder success, and on the Quickturn's statutory power to adopt a "no hand" poison pill defense.

United States Surgical Corp. v. Richard Auhll (Delaware Chancery Court, 1998) (expert report and deposition for defendant)

> Expert reports for defendant Circon Corp., as to reasonableness of continued resistance by Circon's board to hostile tender offer by U.S. Surgical.

United States v. Jeffrey Szur (S.D.N.Y. 1998) (trial testimony for government)

> Testimony in penny stock criminal fraud case, including nature of penny stocks, bid-asked spreads, and the mechanics of short-selling

Virgin Islands Seaplane Shuttle, Inc. v. Bear, Stearns & Co. (D.V.I. 1998) (expert report and deposition for plaintiff)

> Expert report for plaintiff regarding reasonableness of Bear Stearns' actions, including due diligence, in seeking financing for a client, where Bear Stearns referred Virgin Islands Seaplane Shuttle to a financing source who had previously been convicted for securities fraud.

1996:

Krumme v. West-Point Pepperell, 1996 WL 2004 (S.D.N.Y. 1996) (trial testimony for defendant)

> Employment contract case involving interpretation of a change-of-control clause in an employment contract between Mr. Krumme and West-Point Pepperell

1994:

Alberti v. Trupin (S.D.N.Y. 1994) (trial testimony for plaintiff)

> Securities class action involving adequacy of disclosure of ownership, conflicts of interest, and other terms of real estate limited partnerships, including whether counsel for the general partner ignored red flags indicating false or misleading disclosure.

Doss v. Leiva (Fla. 1994) (trial testimony for defendant/cross-plaintiff)

> Fiduciary duty case involving duty of Mr. Doss, as lawyer/financial advisor to the Leivas, where Mr. Doss structured a transaction that gave him control of Miami Free Zone, formerly owned by the Leivas, without cash payment for the shares he received.

Special Master

Independent expert on securitization proposal, in *In re Visa Check/Mastermoney Antitrust Litigation* (Judge Gleeson, S.D.N.Y. 2008-2009)

Reports evaluating benefit to class members of plan to securitize litigation proceeds.

Secial master to Judge Shira Scheindlin in Union Carbide Corp. v. Montell N.V., 27 F. Supp. 2d 414 (S.D.N.Y. 1998)

Antitrust case involving chemicals joint venture between Union Carbide and Montedison.

International Arbitrations

IPOC International Growth Fund Ltd. v. OAO "CT-Mobile" (Stockholm Chamber of Commerce, 2006) (expert report and testimony for respondent)

Report and testimony on application of Russian company law to a shareholder agreement; arbitrators' decision largely adopts my analysis.

Contact Nigel Rawding, Freshfields Bruckhaus Derringer, nigel.rawding@freshfields.com

Expert Reports (without testimony):

Securities and Exchange Commision v Sabhlok (N.D. Calif, 2009) (expert report for defendant)

Report on nature of CFO oversight of financial reporting, for stock option backdating case.

CSX Corporation v. The Children's Investment Fund (S.D.N.Y. 2008). Letters to Securities and Exchange Commission on behalf of defendants.

Opinion letters on application of Securities Exchange Act § 13(d) and related SEC rules to equity swaps.

Contact Andrew Genser at Kirkland and Ellis, agenser@kirkland.com, 212-446-4809.

Peregrine Litigation Trust v. KPMG (Cal. Superior Court 2006) (expert declaration on behalf of intervenor John Moores)

Declaration on adequacy of settlement amount for partial settlement of complex securities litigation with one defendant.

Norex Petroleum v. Access Industries (S.D.N.Y. 2003) (expert report for plaintiff)

Report discusses Russian judicial corruption, and supports plaintiff's claim that the U.S. courts are an appropriate forum for case involving a hostile takeover of a Russian company. The report is available at http://ssrn.com/abstract=1528458.

Surface Transportation Board, Ex Parte No582 (Sub-No. 1) (major rail mergers) (expert report 2000 for Canadian National Railway)

In re Boeing Securities Litigation (W.D. Wash. 1999) (expert report for defendant)

Securities class action involving whether Boeing adequately disclosed its production difficulties during 1998, and whether any disclosure failures would have affected how McDonnell shareholders voted on the then-pending Boeing-McDonnell merger.

ONBANCorp v. Holtzman (N.D.N.Y. 1996) (expert report for defendant)

Case involving compliance with the proxy rules, and what actions constitute a "solicitation" under the proxy rules.

Alumax Inc. v. Commissioner of Internal Revenue (U.S. Tax Court 1994) (expert report for government)

Case involving governance structure of joint venture, and the effect of that structure on whether Alumax could be consolidated for tax purpose with one of the joint venturers.

Seagram Corp. v. Commissioner of Internal Revenue (U.S. Tax Court 1993) (expert report for government)

Case involving integration of front-end tender offer with back-end merger, as part of the acquisition of Conoco by DuPont.

Syms v. Syms (N.Y. Supreme Court 1991) (expert report for defendant)

Case involving fairness of a recapitalization Syms Corp.